

# CTO

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COVER STORY

## The New HR Technology Palette

ALSO INSIDE

## Whirlpool's Global Designs

R.R. Donnelley's  
Dewey Ingham

AN INTERNATIONAL DATA GROUP PUBLICATION



*Information management*  
isn't just processing 3 million voice  
messages every day.

*Information management*  
also helps Tom Welch confirm that  
the big deal went through.

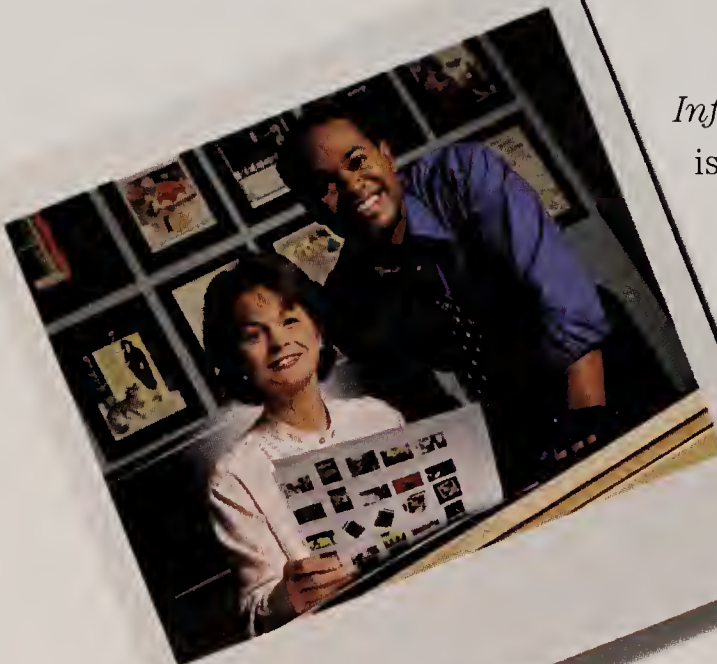
*Information management*  
isn't just processing over 10 million  
emergency phone calls a year.

*Information management* also makes  
sure Carol Boyd's daughter gets the  
medical treatment she needs.



*Information management*  
isn't just processing 10 billion checks a year.

*Information management* also confirms that the  
Tremba Design check cleared today.



*Information management* isn't just  
processing millions of reservations for  
140 of the world's airlines.

*Information management* also tracks every leg of  
Richard Wong's trip—even across several airlines.



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data processing  
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Unisys  
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sight and insight.

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# CIO

VOLUME 8, NUMBER 14



## COVER STORY

HUMAN RESOURCES SYSTEMS

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### Personnel Matters

The pencil-pushing personnel office of yesteryear is no match for the challenges of managing regulatory compliance and overseeing complex benefit plans for today's highly skilled workforce. Enter human resources management, fully armed with IT.

By Megan Santosus

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Cover photo by Marc Berlow

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### Forging a Global Appliance

With international business booming, Whirlpool is creating an online system to link its designers around the world. The system will bring about profound changes in the way people work. To make sure it gets it right, the company has already invested two and half years in its planning.

By Carol Hildebrand



Designing a new  
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### Traffic Report

Is the Internet addressed for success? Can it cope with the flow of traffic—at the present moment and into the future? Will it choke on the graphics-rich World Wide Web? Should you risk your corporate image on a bet that gridlock won't occur? The early answers, at least, appear encouraging.

By Fred Hapgood



MORE >>>

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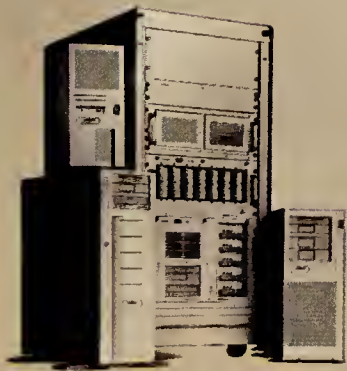
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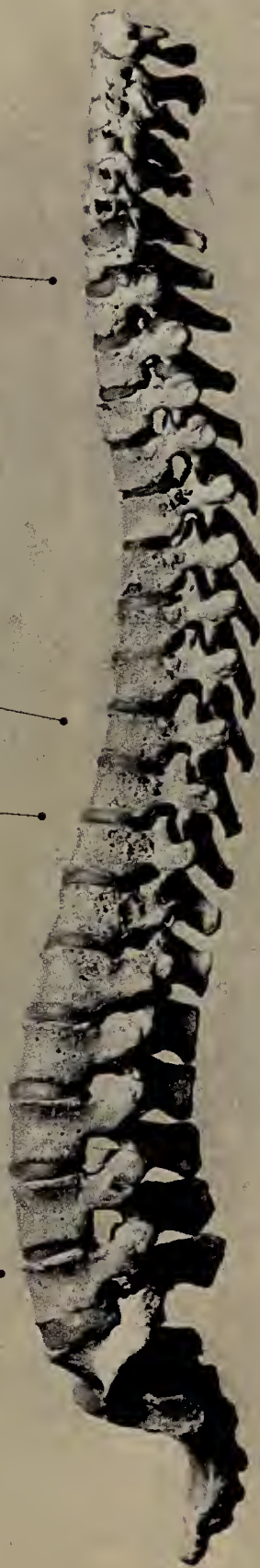


*Fig. 1 Backbone*

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*Ricardo Bartra  
Manager, End-User Computing  
Alamo Community College District  
San Antonio, TX*



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Builders**



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Everyone raves about the benefits of electronic data interchange, but is anybody really counting?

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In reengineering efforts, it can be the employees—and not the technology—that make or break a project.

By Lucinda Halate



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#### STATE OF THE ART: A LONG REACH

New network-simulation tools are providing IS managers with the ability to model and administer their enterprise networks with live data from a central site.

By Peter Cassidy

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#### CIO CONFIDENTIAL: HOW I GOT FIRED

The facts themselves may be clear in one's mind. But the old hard drive still strains to recall certain vaporous data streams....

By W.F. Dyle

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Leading global companies, and those that hope to become leaders, build and deliver better products and services more quickly than the competition, no matter where in the world the expertise and resources exist. Our profile of Whirlpool Corp., which begins on Page 32, proves the point.

After two and a half years of planning, the Benton Harbor, Mich., company is about to implement a worldwide product-data management system for its product-development and manufacturing groups. Known as PDM, the system is essentially an industrial-strength version of groupware, which tracks every document associated with a product, from CAD/

CAM drawings to change orders, throughout the development cycle.

Senior Writer Carol Hildebrand went inside Whirlpool to learn how this extraordinary project is getting off the ground. She found a company committed to integrating its geographically dispersed businesses and to leveraging its advanced management expertise across Whirlpool operations worldwide. PDM is a cornerstone of Whirlpool's massive globalization effort. It will allow engineers and product designers from Mexico to Singapore to share design information—and the company hopes to slash product-design time by 50 percent.

IS executives often remark how difficult it is to demonstrate hard-dollar savings from information systems. EDI may be an exception. (Please see "The Economics of EDI," beginning on Page 62.)

Electronic data interchange is being adopted by an increasing number of organizations, including smaller and more budget-conscious firms. While not every company is convinced that EDI is worth the investment, interest is growing.

The benefits are undeniable. EDI streamlines the purchasing process and reduces paperwork and cycle times. EDI can reduce invoicing and order-processing time, cut procurement cycles, shorten delivery schedules, cut personnel costs and reduce clerical errors.

Most important, EDI can deliver real, documented cost savings. Moving to EDI and getting rid of the paper process alone saved Avex Electronics Inc. a quarter of a million dollars in 1993 and a half-million in 1994. NASA's Goddard Space Center recently invested in a pilot program and expects a payback in 12 to 24 months. EDI experts say business orders that once cost \$65 to \$85 now cost as little as \$4 to process.

But EDI also can change the way companies do business. As one EDI expert observed, for many companies, "[reengineering] and EDI go hand in hand."

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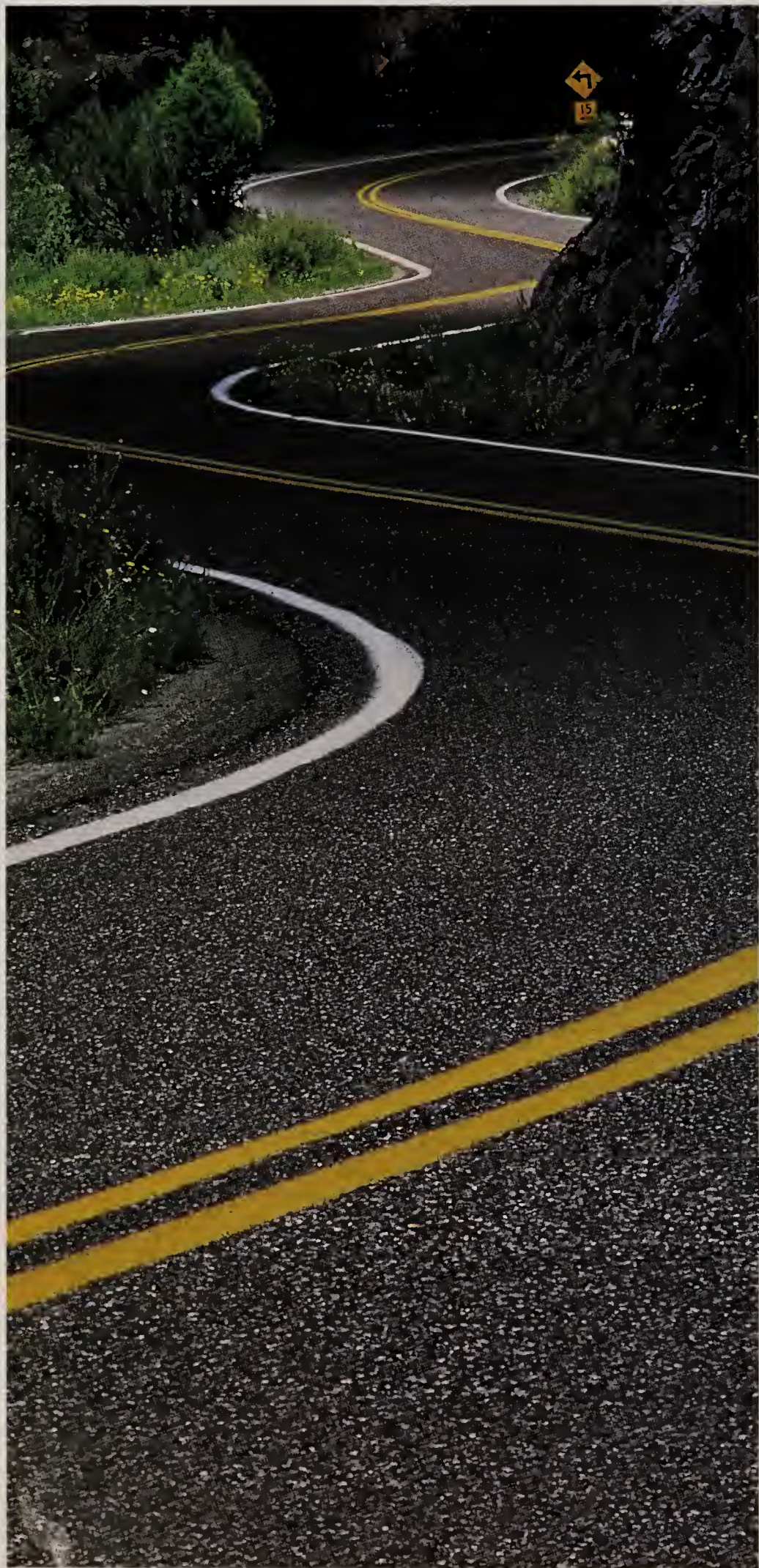
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|----------------------------------|---------------------------------------------------|---------------------------------------------|
| Optimized for Parallel           | No                                                | Yes                                         |
| Consistent Architecture with SP2 | No                                                | Yes                                         |
| Index Scan                       | No                                                | Yes                                         |
| Inserts                          | No                                                | Yes                                         |
| Selects                          | Yes                                               | Yes                                         |
| Updates                          | No                                                | Yes                                         |
| Deletes                          | No                                                | Yes                                         |

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*Cost-justifying EDI can be a "vague process. The savings are there, but it's difficult to determine what those savings are."*

*—Doug Hanson  
Program Manager for Scientific  
Engineering Workstation Procurement  
Goddard Space Flight Center, NASA*

I encourage any executive who shies away from investigating the hard-dollar return and soft benefits of electronic data interchange to make "The Economics of EDI" (beginning on Page 62) must reading. IT executives already using the technology will be the first

to tell you that the savings can be substantial, if not dramatic.

Just how are companies reducing costs via EDI? Personnel reductions, elimination of printing, postage and mailing processes, error and inventory reduction, productivity improvements and shortened cycle times add up to lower operating costs and a better bottom line. And as in other maturing markets, investment costs are coming down. One major expense—transmission costs—are certainly bound to take a nose dive as Internet access and direct-connect options will force network service providers to respond with lower rates.

More important, some companies are dropping business partners that do not embrace EDI. That alone is justification for an EDI investment.

*Walter L. Lutz*

P.S. Get the recognition you deserve. The Enterprise Value Awards program is open to any IT- and business-executive team that has enhanced business value through an innovative application of information technology. An application form is bound within this issue (following Page 18).

# Coming In CIO

## What's in a Name?

**W**hat's a chief technology officer? Nobody seems sure. In a few organizations, the CTO is simply the CIO by another name. At others, the CTO plays a much bigger role on the business side than the CIO ever did. And at still others, the CTO rarely ventures out of IS. CTOs remain a relatively rare breed, but some consultants predict their ranks will grow rapidly over the next five years. We'll try to pin down this position, including how it compares with the CIO and how it can affect the organization.

## Legal Systems

**T**he legal profession has been a holdout on the use of technology, but all that is changing. Pressures to become more efficient are forcing lawyers to use productivity-enhancing tools such as word processing, e-mail, scanning and faxing. On a more strategic level, lawyers are using such technologies as groupware, document management, online databases, imaging, expert systems and videoconferencing to manage and research their cases.

## Signs of Support

**T**he area of software support is changing. Vendors that used to offer free support are now charging for it as an add-on. Some vendors offer to support other vendors' software as well as their own. There is also a trend toward third-party software support, in which companies that don't make or even sell software are selling support services. *CIO* will take a look at the emerging developments in this area and try to gauge how well they're working.

## After all, it takes time to develop superior client/server solutions.

While other companies have rushed head-long to market with bits and pieces of "almost there" technology, Ross has quietly gone about the business of building a superior client/server architecture. And producing a full suite of robust open systems solutions that run on HP, Digital and IBM platforms, using popular databases like Oracle, Sybase, Rdb and Ingres.

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# TRENDLINES

## INTERNET EDUCATION

### BRINGING THE MOUNTAIN TO MOHAMMED

**W**hen it comes to convincing users of the benefits of an unfamiliar technology, there's nothing like letting them try it out for themselves. Witness the phenomenal market for home video-game equipment: Without their long-time presence in public arcades, the games probably would have taken a lot longer to catch on at home. Today, a number of efforts—including MCI's "Cyber-Rig" and the Boston-area Cyber-smith store—let consumers take a "test drive" on the information superhighway.

For example, MCI Telecommunications Corp. is real anxious to swell the ranks of the networked, but a recent study it conducted with the Gallup Organization suggests that almost 50 percent of businesspeople are intimidated by or resistant to the new technologies. In addition, while 80 percent of businesspeople "see the information highway as on its way, many don't know how to approach it," says Scott Ross, president of MCI Business Markets in Atlanta.

In an effort to get the technophobes out on the driving range, the company hit the road with an 18-

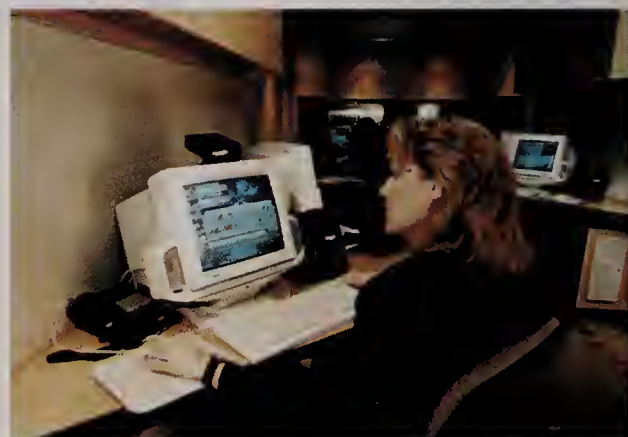


wheel, 48-foot "Cyber-Rig" in February. The truck, which departed from New York on a seven-month, 50-city trip, is outfitted with workstations that allow businesspeople to try out the latest in communications and information technology. Visitors can play around on 486-based computers, fax/modems, Windows and MCI business software, as

well as desktop videoconferencing systems. MCI representatives are on hand to help steer visitors through the uses and benefits of the technologies.

The truck also houses a 12-seat "techno-theater"—

basically a presentation/conference room offering a full videoconferencing system as well as various video and audio technologies. And if that don't sell 'em, the Cyber-Rig also serves as a mobile television studio; CNN is using it as an interactive



broadcast site for its *Talk-Back Live* program as the truck makes its way across

## LISTS TO-DO

**W**hile everyone is busy trying to make a business case for the Internet, few would question its entertainment value. If you've been wondering how your friends and colleagues have been using the Net in their spare time, the following were the top 10 e-mail discussion lists as of January 1995, according to a report by Walter Shelby Group Ltd. of Bethesda, Md.:

- 1 **TOPTEN:** David Letterman's Top-10 list (27,212 subscribers)
- 2 **MAP2:** Roadmap Workshop Distribution List (25,820 subscribers)
- 3 **ROADMAP:** Roadmap for the Information Superhighway Subscription List (22,452 subscribers)
- 4 **MINI-AIR:** The Mini-Annals of Improbable

Research (22,336 subscribers)

- 5 **MAPTEST:** Roadmap Workshop Distribution List (16,214 subscribers)
- 6 **TIDBITS:** TidBITS, a newsletter for Macintosh users (15,794 subscribers)
- 7 **NEW-LIST:** New List Announcements (12,717 subscribers)
- 8 **INDIA-D:** The India News & Discussion Network (10,960 subscribers)
- 9 **CNDPSU-L:** China News Digest (Global Service) IV (10,370 subscribers)
- 10 **LOOKING:** The Personals India Network (10,220 subscribers)

To join any of these e-mail discussion lists, send a message with the command *sub list-name your name* to any Listserv site, such as [listserv@listserv.net](mailto:listserv@listserv.net).

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# TRENDLINES

the United States.

While the Boston-area Cybersmith store lacks the Cyber-Rig's mobility, it is more consumer-friendly and serves better croissants. The new-wave-ish coffee shop, bookstore, arcade and try-before-you-buy software retailer was created by entrepreneur Marshall Smith, founder of retail chains Paperback Booksmith, Video-smith and Learningsmith. The Cambridge, Mass., spot has been pulling in a steady crowd of academics, newbies and techno-savvy cyberspace surfers since its opening in February.

Visitors can explore various online services, the Internet and World Wide Web,

CD-ROM titles and virtual reality, all while sipping a steaming cup of latte. Cybersmith customers purchase a six-month membership card for a dollar; the card is encoded with a metal strip that tracks how much time is spent at each machine. Say a member's 7-year-old son wants to check out one of Humongous Entertainment's Putt-Putt games—the kid plops himself down in one of the booths, inserts the card and starts playing. At the end of the game, the time spent is recorded on the card (computer usage costs 17.5 cents per minute, or roughly \$10 per hour).

The computers—most of which are Power Macintosh-

es and Gateway 2000 machines—are mounted in custom-made cherry-stained hardwood boxes in the center of each table. Introduction screens with easy-to-understand icons guide users to the various offerings; online services include e-World, CompuServe, America Online and smaller, lesser-known services like Women's Wire. Cybersmith's browser, Netscape Navigator, lets users explore the World Wide Web. With a few keystrokes, patrons can also order coffee, scones or salad from Smitty's Online Café. Orders for refreshments and technological assistance are fulfilled by Cybersmith's Technosmith waiters/tech-

nology assistants.

A diverse crowd of tourists and locals fills Cybersmith to capacity on the weekends and during the weekday lunch hour. "It appeals to the 30- to 50-year-old novice who doesn't know much about computers and wants hands-on experience and assistance," says Laurie Durcan, a Cybersmith spokeswoman. Durcan says the store is also frequented by kids wanting to show off for their parents, and people in their 20s and 30s looking for "a sense of community and atmosphere." Then there's the 75-year-old woman who visits daily to participate in online chats about the O.J. Simpson trial.

Whether efforts like Cyber-Rig and Cybersmith will remain popular—or even necessary—in the future is open to question. As the technologically curious are transformed into the technologically astute, more and more people will have this stuff in their homes and offices, and stepping out for an IT break just won't be necessary. In a report released soon after Cybersmith's opening, Forrester Research Inc. predicted that "these new venues will be a two- to three-year phenomenon that exists only while PC users without Internet connections exist."

But for now, Cybersmith isn't worried. "With the pace of technology what it is right now, people are going to want to get access to the new stream of [products] in order to experience them, learn about them and decide whether or not to purchase [them]," says Durcan. "It's all about the experience, and I don't think that role will ever diminish."

—Brooke R. Burton

## FOR YOUR EYES ONLY

**S**ure, artificial intelligence has done great things for financial services and medical diagnostics. But what good is that when all you really want is a great-looking pair of glasses? Well, the vain and nearsighted are in luck: An

boutiques in Japan, Australia, France and Germany are first photographed by a digital camera linked to a Unix workstation; image-processing software then analyzes their facial

features and recommends an attractive eyeglass style. The system displays an image of the customer's face "wearing" the new design; if the customer likes it, the design is finalized and the glasses can be ready in about an hour.

The system is slated for rollout in more than 500 new installations in Japan alone. (The system was created by IF Computer Japan using IF/Prolog software from Siemens Nixdorf Information Systems Inc.) Besides the ob-

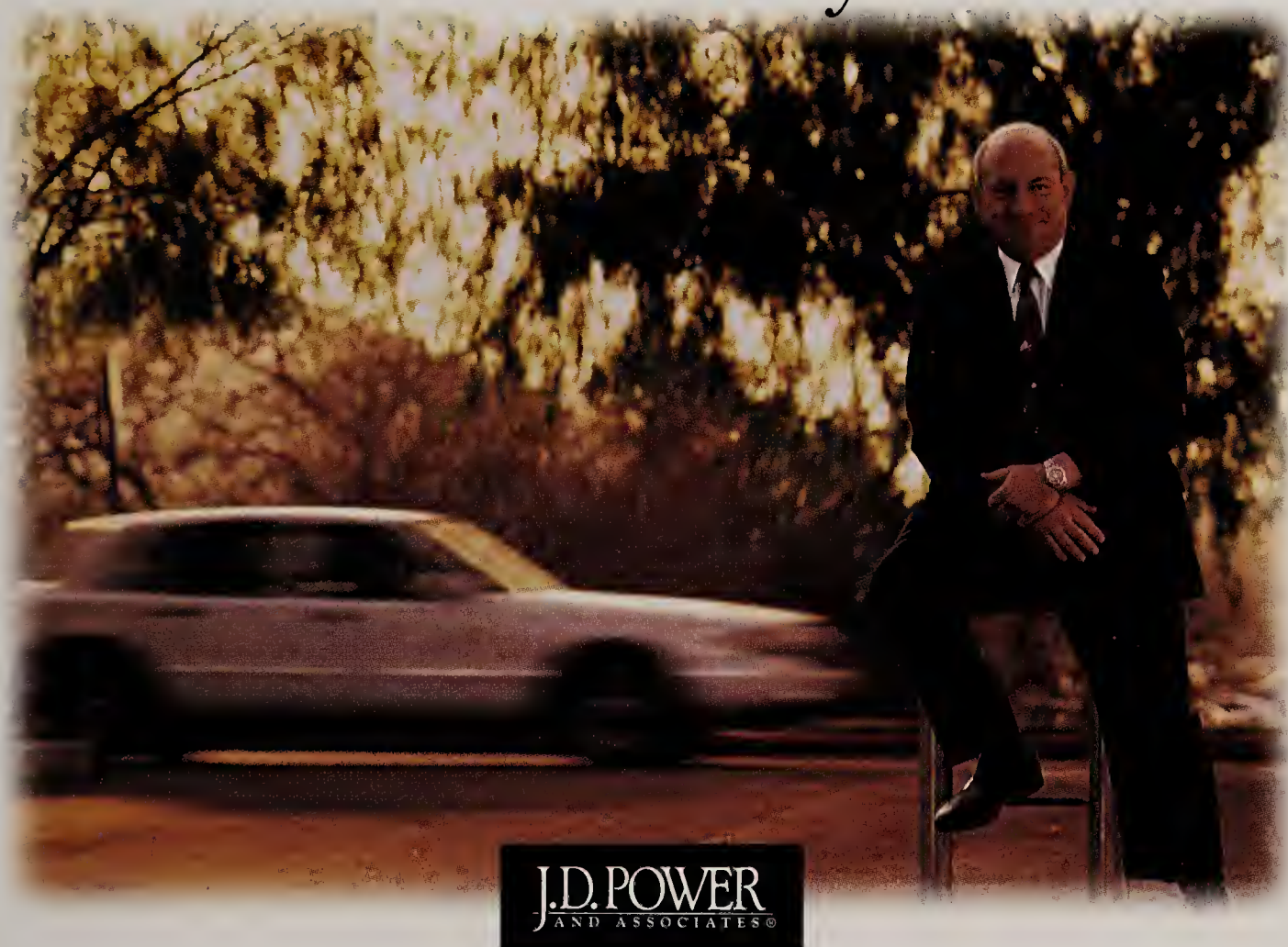


AI-based system in use at a major Japanese opticians' chain can suggest a shape and color for the frame of your glasses based on a photo of your face.

To get that perfect look, customers at Miki

vious benefits for those with less-than-perfect vision, Siemens cites reduced inventory levels and improved customer service as advantages for opticians. Call Siemens Nixdorf USA at 617 273-0480. ■

# *J.D. Power and Associates Drives Decisions with the SAS® System*



**Will the cars on the drawing board today meet consumer demands of tomorrow? That's the question facing J.D. Power and Associates. The answers are coming from the SAS System.**

"We produce a monthly forecast of car and truck sales for about 300 different vehicles," says Jon Rosenthal, Manager of Automotive Forecasting for J.D. Power and Associates. "Each vehicle is forecasted by month for five years beyond the current year. Right now I'm forecasting through the year 2000."

## ***The SAS System Fits Our Business***

"The SAS System is the fuel behind those forecasts...our software of choice for analyzing sales, economic, and auto industry data and then reporting what we've learned," adds Rosenthal. "Before the SAS System, much of the forecasting was done by hand. To make our forecasts credible, we had to have a credible system. One that made it easy to build applications and put them to work across our computing environments. We've got minis, Macs, desktop publishing, and a lot of spreadsheets. The SAS System fits the way we do business."

## ***The Bottom Line is Information***

Now that the forecasting model is up and running, Rosenthal and his staff are using the SAS System to build an interactive database. "The Power Information Network will allow an auto dealer or manufacturer to go online and get market information," Rosenthal explains. "When released, subscribers will be

able to select from a long menu of reports and data. The versatility of the SAS System is crucial in developing the reports."

"The bottom line is this: applications are being developed with the SAS System that will deliver the most up-to-date information to those who make decisions for the automotive industry," says Rosenthal. "If manufacturers and dealers can get their hands on accurate market information and predictions, they have a much better chance of meeting customers' needs down the road."

**To receive a SAS System Executive Summary, give us a call or visit us on the World Wide Web at <http://www.sas.com>**



SAS Institute Inc.  
Phone 919-677-8200  
Fax 919-677-4444  
Email: [cio@sas.sas.com](mailto:cio@sas.sas.com)  
In Canada: 1-800-363-8397

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# TRENDLINES

## THE MOBILE WORKFORCE

### PILGRIMS' PROGRESS

Supporting mobile workers doesn't figure prominently in most CIOs' current workloads, but that's soon to change. While over a third of the information systems executives surveyed at the January 1995 Information Management Forum (IMF) meeting in San Diego said they are doing very little to support the mobile worker today, they all expect mobile work to become much more prevalent—and play a larger role in their jobs—over the next five years. A full quarter of the executives said that they expect more than 50 percent of their organization's workforce will be computing away from the home office by the year 2000.

Some organizations, of course, are further along than others in their exodus from the office. IS executives at three such companies—Federal Express Corp., Digital Equipment Corp. and Coca-Cola Enterprises Inc.—shared some advice with their peers at the IMF meeting. Here's what they had to say.

■ Harry Seratt, managing director of information management for the information and telecommunications division of Federal Express in Memphis, Tenn., supports 150,000 users with 650,000 miles of dedicated circuitry in 158 countries. His organization has 80,000 active e-mail users who perform 20 million transactions a day. In the area of package delivery, of course, FedEx is a mobile-

computing pioneer and now supports 104,000 hand-held computers, 486 wireless servers and 44,000 radios. Now, said Seratt, it is automating its sales force with portable laptops and e-mail.

Seratt's advice: "Be careful [to pursue] solutions that are integrated, as opposed to something that is just laid on." To that end, Seratt said he advocates having a "fairly rich toolbox," so that the IS organization can respond to the needs of the customer rather than simply impose a solution. That means always adding to the technology stable. For example, FedEx is considering desktop video for corporate managers and wireless modems for use with the laptops. In addition,

staying focused on customers and allowing them to be in charge of the automation process is paramount. "Of course," warned Seratt, "the concepts are simple, but the execution is not so easy."

■ George Champine, director of infrastructure technology and architecture strategy for information technology and management at Digital in Maynard, Mass., faces a different challenge in supporting his company's mobile workforce. Since Digital's staff all work in a high-tech

In a recent survey of 625 school principals, *American School & University* magazine found that only about 7 percent of schools have the 1-to-5 computer-to-student ratio that is considered ideal. The median was 1-to-10.

setting, they are technologically savvy and very demanding. "My mobile clients want the same functionality at home as they have in the office," Champine said. "Fortunately, the technology is now available."

Digital upgraded to a fairly sophisticated e-mail system in 1981 and has long had many users accessing the office mainframe with PC terminal emulation from home. But now Champine is supporting many new users, such as the sales, repair and consulting staff. Digital's goal is to offer workers anywhere in the world the same tech-

## A SCENE OF CHANGE

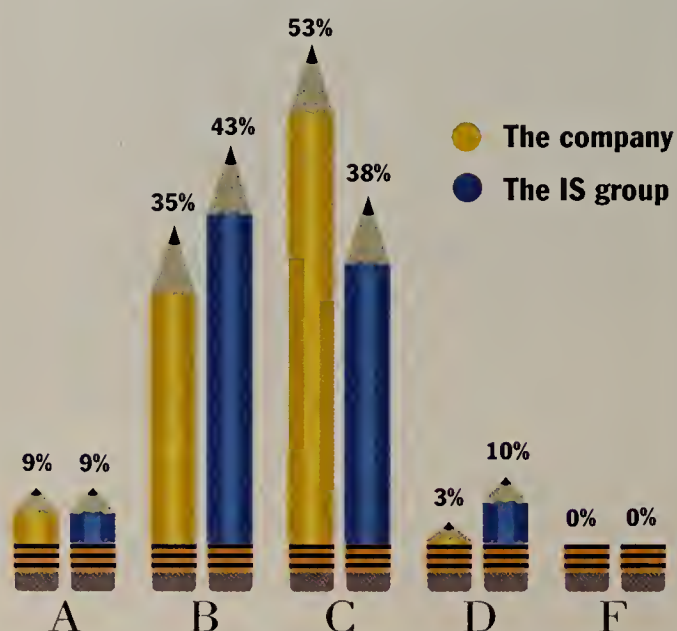
Managing change and managing costs are the top two concerns for IS chiefs and the organizations that employ them, according to the 43 IS executives polled at the January

1995 annual meeting of the Information Management Forum in San Diego. Accordingly, they said that building business partnerships with end-user management is the first step in handling the upheavals of their profession.

The executives also ranked how well their IT organizations—and their companies—were handling the change imperative. Most gave both a B or C; A's were relatively rare (see chart).

Regarding specific technologies, the executives strongly felt that supporting mobile computing would be an increasingly important part of their jobs (see "Pilgrims' Progress," above). But when it came to predicting the effect of the Internet on their IS organizations, a full 50 percent said they expect "no change."

**Making the Grade**  
How IS executives grade change management at their companies and in their IS organizations  
(Percentage of 43 respondents)



SOURCE: INFORMATION MANAGEMENT FORUM, ATLANTA, GA

# Application Form

## Enterprise Value Awards For 1995

*Honoring executives who craft  
innovative information technology  
solutions to enhance business value*

Sponsored by CIO Communications Inc.



**APPLICATION DEADLINE: JULY 1, 1995**

# The Enterprise Value Awards<sup>SM</sup>

*Honoring executives who craft  
innovative information technology solutions  
to enhance business value*

SPONSORED BY



## CRITERIA

Winners will be chosen by a panel of independent judges from among entrants who have submitted completed application forms to CIO by July 1, 1995. Entries will be judged on the following criteria:

- The extent to which the system adds business value in furthering the organization's strategic objectives
- The measurable financial return the system provides to the organization
- The extent to which IT was key to achieving the overall business solution—the "couldn't have done it without technology" factor
- The quality of collaboration between the business unit and IS organization that is achieved throughout the course of the project

All finalists will be subject to an in-depth analysis of the nominated system (to be performed by CIO or its agents). This analysis, which may require a site visit, will be based on interviews with sponsoring executives and system users, and will be designed to substantiate all claimed benefits. Notification of winners will occur on or about Oct. 16, 1995. CIO reserves the right to publish relevant cost and savings figures that establish the claimed ROI of the system; *the willingness to divulge this information for publication is a condition of entry.*

## DEFINING VALUE

We invite applicants to consider the broadest possible spectrum of enterprise value. The following list of IT-enabled benefits is intended to help guide applicants' thinking:

- new, innovative and more productive ways of doing business;
- revamped organizational structures or styles of performing the work of the enterprise;
- the ability of the enterprise to enter a new market;
- successful global operation or expansion;

- transformation of the way the enterprise competes within its customary market or that alter the terms of competition within the market;
- improvement of the enterprise's relationships with its external customers;
- improvement of the enterprise's relationships with its own employees or among its functions (such as marketing, finance or human resources);
- the ability of the enterprise to compete more effectively by adding to the sum of its available knowledge assets;
- leaner and more economical operations.

## ENTRY GUIDELINES

- The system must have been operational prior to July 1, 1993.
- Entrants must agree to be featured, along with their system and organization, in a CIO article.
- Entries must be complete.
- Entries must be on 8.5x11-inch paper, one side per sheet.
- The application form may be reproduced.
- Multiple entries from one company will be considered, but each entry must be submitted separately.
- Entries must be made jointly by the IS executive AND the business sponsor for whom the system delivers value.
- IT vendors, public-relations and advertising firms, consultants and other third parties may NOT apply on behalf of another firm. They are encouraged to forward this form to the "owner" of the system, or to contact CIO Communications to recommend that an application form be sent to their client.
- All entries must be computer-generated or typed; no handwritten entries will be accepted.
- When feasible, an additional copy of the entry should be sent on a 3½ -inch disk. Electronic entries must be limited to word-processing and spreadsheet packages that are compatible with Microsoft Word and Microsoft Excel on an IBM or Macintosh platform.



# Finally, an award for information technology that recognizes people and their organizations.

**M**OST AWARD PROGRAMS recognize "Best Product" or "Most Innovative System." How about rewarding the strategists who take those products or systems and make them work to their best potential? They really deserve the credit.

As an IT or business executive who has built or utilized an information technology system that delivers both demonstrable ROI and strategic value to your organization, you deserve recognition and praise. CIO has created the Enterprise Value Awards to honor the architects of innovative IT solutions and in doing so, hopes to inspire others in their search for enterprise value.

## ENTERPRISE VALUE AWARDS TIMELINE

**APPLICATION DEADLINE:** July 1, 1995

**JUDGES SELECT WINNERS:** October 1995

**ANNOUNCEMENT OF WINNERS:**  
October 16, 1995

**AWARDS CEREMONY:** February 6, 1996  
at the CIO Enterprise Value Summit

## DO YOU QUALIFY FOR AN ENTERPRISE VALUE AWARD? THREE CRITERIA ARE ESSENTIAL...

1. The pervasiveness of information technology—in other words, the strategic objective could not have been met without IT's contribution
2. A return of value to the enterprise (see Defining Value within this application form)
3. A partnership between an IT and business executive

If your innovative solution meets the above criteria, please fill out this Enterprise Value Awards application form. The February 1, 1996 issue of *CIO* will feature profiles of the winning organizations and the executives who have proven their strategic technology investments have had a positive and sustained impact on enterprise value.

On February 6, 1996 CIO will host a special awards ceremony honoring the winners at the annual *CIO* Enterprise Value Summit. If you would like to learn more about the *CIO* Enterprise Value Awards program, please call Tracey Grogan at (508) 935-4449.



1. COMPANY/BUSINESS UNIT

▲ NAME OF PARENT COMPANY

CITY, STATE WHERE HEADQUARTERED

PUBLICLY HELD? PRIVATELY HELD?

ANNUAL REVENUES

INDUSTRY

NAME OF BUSINESS UNIT OR ORGANIZATION

CITY, STATE WHERE LOCATED

NUMBER OF EMPLOYEES AT BUSINESS UNIT

2. ENTRANTS

A.

▲ NAME OF ENTERING I.S. EXECUTIVE

TITLE

NAME OF DIVISION, DEPARTMENT OR UNIT

ADDRESS

CITY

STATEZIP

( ) ( )

TELEPHONEFAX

B.

▲ NAME OF ENTERING BUSINESS-UNIT EXECUTIVE

TITLE

NAME OF DIVISION, DEPARTMENT OR UNIT

ADDRESS

CITY

STATEZIP

( ) ( )

TELEPHONEFAX

3. SUPPORTERS

Please list four people who are willing to be interviewed with regard to the system, its development, its use and the value returned. At least one should be a member of the technology team that developed the system and should have played a significant role. At least one should be a primary user from the sponsoring business unit. The other two may be from either organization or represent suppliers, customers or others intimately familiar with the system.

A.

▲ NAME

TITLE

( ) ( )

TELEPHONEFAX

REASON FOR INCLUSION

B.

▲ NAME

TITLE

( ) ( )

TELEPHONEFAX

REASON FOR INCLUSION

C.

▲ NAME

TITLE

( ) ( )

TELEPHONEFAX

REASON FOR INCLUSION

D.

▲ NAME

TITLE

( ) ( )

TELEPHONEFAX

REASON FOR INCLUSION

MAIL TO:

DEADLINE:

JULY 1, 1995

ENTERPRISE VALUE AWARDS  
CIO COMMUNICATIONS INC.  
492 OLD CONNECTICUT PATH  
PO Box 9208  
FRAMINGHAM, MA 01701-9208

#### 4. THE NOMINATED ORGANIZATION

Please tell us about your organization (company, business unit, agency) in 500 words or less. Include information on:

- when the organization was founded;
- mission statement;
- major products and services;
- markets served;
- any other data you believe to be relevant in terms of general background.

#### 5. THE NOMINATED SYSTEM

Tell us about the nominated system and demonstrate its importance to the organization by completing the following sections. Please limit your material to five pages.

■ **OBJECTIVE:** Identify the primary business objectives of the IT investment.

■ **SCOPE AND IMPACT:** Identify the functions (e.g., customer service, manufacturing, planning) that were changed by the system, the nature of those changes and their impact on the business. Identify other business-change initiatives tied to the IT investment.

■ **ADDED BUSINESS VALUE:** Describe how the technology investment is furthering the organization's strategic objectives, including any new business initiatives. Note any significant event that would help us evaluate the nominated system's value. Examples might include a merger, a new distribution channel or a significant regulatory change.

■ **THE IMPORTANCE OF IT:** Identify the different components of the overall business change (e.g., business reengineering, downsizing, cycle times). Explain the importance of the IT component to the overall business change. Could the results have been achieved without IT?

■ **COLLABORATION:** Describe how the business unit and IS organization worked together throughout the project—from concept to implementation. What were the specific tasks fulfilled by the business unit? IS organization?

#### 6. QUANTIFYING ROI

Please provide a detailed summary of the nominated system's investment costs (including all up-front development expenses and annual maintenance charges) and its ROI to date. Include reasonable estimates of indirect and/or "soft" benefits.

#### 7. TECHNICAL PROFILE

Briefly describe the technology of the nominated system. Please include the names of major vendors and products. If you prefer, you may attach a document containing a technical description of the system, providing it is no more than five pages.

NOTE: The examples provided here are meant to be illustrative, not all-inclusive:

- Architecture (e.g., client/server, distributed, mainframe)
- Hardware (e.g., mainframe/parallel processor, mini-computer/server, desktop computers, handheld/portable devices)
- Software (e.g., operating systems, database system, shells, application software)
- Software development tools (e.g., CASE, 4GLs, GUI developers, object-oriented development tools)
- Networking/communications hardware, software and

services (e.g., modems, routers, electronic-mail packages, carriers and public networks)

#### 8. TRUTH OF INFORMATION/RELEASE

The following release must be signed by both nominating executives if the application is to be considered. *Unsigned releases will invalidate the entry.*

I **HEREBY STATE** that the information provided is true and complete to the best of my knowledge and belief.

I **AUTHORIZE** the release and use of, in connection with the Enterprise Value Awards program, any and all materials furnished by me or others at the company contacted for this judging. I understand that information submitted on this application or subsequently gathered during the evaluation and judging process may be used in articles or any other type of publicity relating to the Enterprise Value Awards program.

I **ALSO AUTHORIZE** the release and use of my name, my company's name and my likeness, including but not limited to any photographs and any recording of my voice or image that may be taken of me for *CIO Magazine*. I agree that no compensation shall be due me or my company for such usage.

I **RECOGNIZE** that failure to meet these conditions or to provide sufficient material that can be published can cause the application to be rejected at any point in the process at the sole discretion of the sponsors.

1.

▲ SIGNATURE OF NOMINATING I.S. EXECUTIVE

DATE

2.

▲ SIGNATURE OF NOMINATING BUSINESS EXECUTIVE

DATE

#### 9. OTHER EDITORIAL OPPORTUNITIES

If you are not selected as an award recipient, are you willing to be contacted for inclusion in other articles in *CIO Magazine*? YES ☐ NO ☐

How did you learn about the Enterprise Value Awards program?

- |                                             |                                                  |
|---------------------------------------------|--------------------------------------------------|
| <input type="checkbox"/> CIO MAGAZINE       | <input type="checkbox"/> ACADEMICIAN             |
| <input type="checkbox"/> CONSULTANT         | <input type="checkbox"/> IS STAFF MEMBER         |
| <input type="checkbox"/> SYSTEMS INTEGRATOR | <input type="checkbox"/> OTHER PUBLICATIONS      |
| <input type="checkbox"/> PR AGENCY          | <input type="checkbox"/> VENDOR                  |
| <input type="checkbox"/> ADVERTISING AGENCY | <input type="checkbox"/> OTHER (PLEASE IDENTIFY) |

#### CHECKLIST

##### HAVE YOU FILLED OUT...?

- ☐ Company/Business-Unit, Entrants and Supporters Information

##### HAVE YOU INCLUDED ON SEPARATE PAGES...?

- ☐ Nominated Organization
- ☐ Nominated System
- ☐ Technical Profile
- ☐ Additional Return on Investment Material

##### HAVE BOTH ENTRANTS SIGNED AND DATED...?

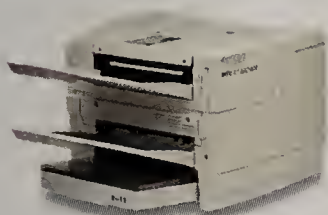
- ☐ Truth of Information/Release

##### HAVE YOU CHECKED OFF...?

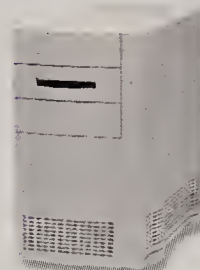
- ☐ Other Editorial Opportunities
- ☐ How you learned about the Enterprise Value Awards program?

# Your mobile work force is here.

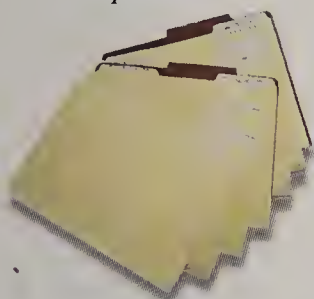
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*Customer Files/  
Paperwork*



*Voice Mail, E-Mail and  
other messages*



## Too bad nothing else is.

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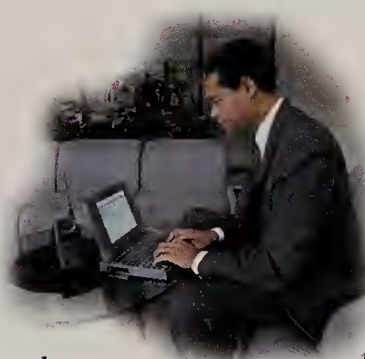
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## Ameritech

YOUR LINK TO BETTER COMMUNICATION

# TRENDLINES

nical environment as exists in corporate headquarters; to do that, Champine said, the newest technologies are critical. So serial-line Internet Protocol, point-to-point protocol, 14.4Kbps modems and point-and-click interfaces have become key tools in Digital's effort to support mobile work.

Champine's advice: Think carefully about the systems architecture that you use in your transition to mobile computing. He advocated managing the servers, not the client, and warned about the cost of managing and upgrading the self-sufficient client. Security issues are also key; Digital has been a target for hackers, said Champine. For security tools, he recommended MIT's Kerberos V, which is available through the Open Software Foundation.

■ Coca-Cola Enterprises, the famed soft drink's bottling company in Atlanta, began its mobile-computing activities in 1986. In

supporting its drivers with hand-held devices, providing reliable hardware and software for unsophisticated users was the number-one challenge. Getting vendors to understand the company's business so that they could develop software to meet its unique needs was also an early obstacle, said Mike Dekker, director of shared systems. Now the company is in the process of automating its sales force.

Dekker's advice: Focus on your requirements analysis so that you are pinpointing processes that add value. Also, it is easy to underestimate the number of support staffers you will need for mobile computing, so review your staffing and skill sets carefully. And finally, garner management support early. For the company's sales-force-automation effort, Dekker works with an "executive sponsor from the business unit, who is heading up the project."

—E.B. Baatz

## EVENTS

### Out on the Technology Edge: Leading Without Bleeding

May 11 & 12  
Holiday Inn Rushmore Plaza,  
Rapid City, S.D.  
National Association of State  
Information Resource  
Executives (NASIRE)  
606 231-1905

This conference will highlight innovative IT leadership approaches for state governments and help CIOs in such organizations tackle the challenges before them. Registration: \$195-\$445

### 9th Annual RACF-95 Knowledge Expo

June 4-9  
The Hilton at Walt Disney  
World Village, Orlando, Fla.  
Vanguard Integrity  
Professionals  
714 939-0377

This conference offers a classroom-style environment in which informa-

tion-security professionals can gain practical knowledge about Resource Access Control Facility (RACF) security, audit and control issues. A newly expanded curriculum will cover the latest techniques in this area. Registration: \$1,170-\$1,795

### 1995 Business Transformation and Reengineering Conference: Shaping Your Organization to Achieve Success

June 7-9  
Hyatt Orlando, Orlando, Fla.  
Clemson University and IBM  
Consulting Group  
803 656-2200

Two dozen speakers from leading corporations will present case studies and share experiences in reengineering and new ways of doing business. Registration: \$695-\$995

## FLOW CHARTS

For many organizations, reengineering involves some use of workflow software to organize, automate and man-

age business processes, coordinate the work of many people and integrate the data and documents required to support the work process. Little surprise, then,

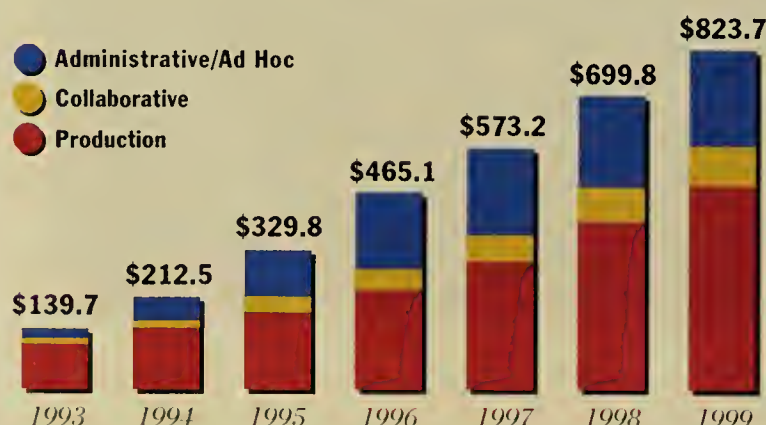
that the worldwide market for workflow tools is booming.

Indeed, according to a recent study by BIS Strategic Decisions, this market—which includes development tools and workflow engines, databases and desktop run-time

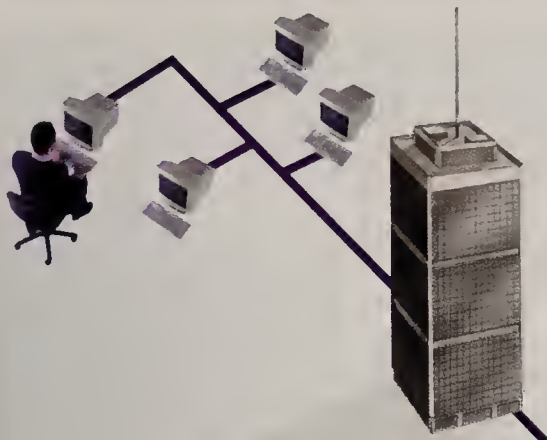
components—will grow from \$213 million in 1994 to \$824 million in 1999. BIS distinguishes three segments within this market: Production workflow addresses transaction-oriented, high-value, repetitive processes such as insurance claims and accounts payable; collaborative workflow deals with nontransaction-oriented, high-value, nonrepetitive processes such as new-product development and sales automation; and administrative/ad-hoc workflow addresses low-value processes involved in routine office work. It is the first category that represents the largest proportion of the market, according to BIS. Call 617 982-9500. ■

### WORKFLOW TOOLS REVENUE FORECAST

Revenue in millions



SOURCE: BIS STRATEGIC DECISIONS



### How Long Have You Waited For This?

For most of us, it probably seems like forever that organizations have been trying to integrate a mixture of old and new, centralized and distributed networking protocols to solve today's business-critical needs. But with mixed results.

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Fortunately, Ascom Timeplex has developed an internetworking architecture that lets you integrate SNA and LAN data into a single network with absolutely no compromise in quality and service.

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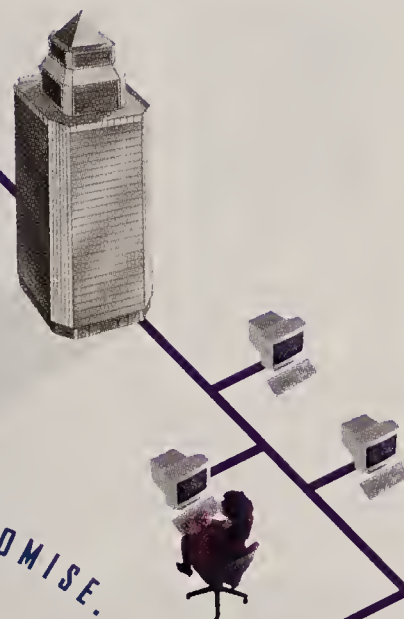
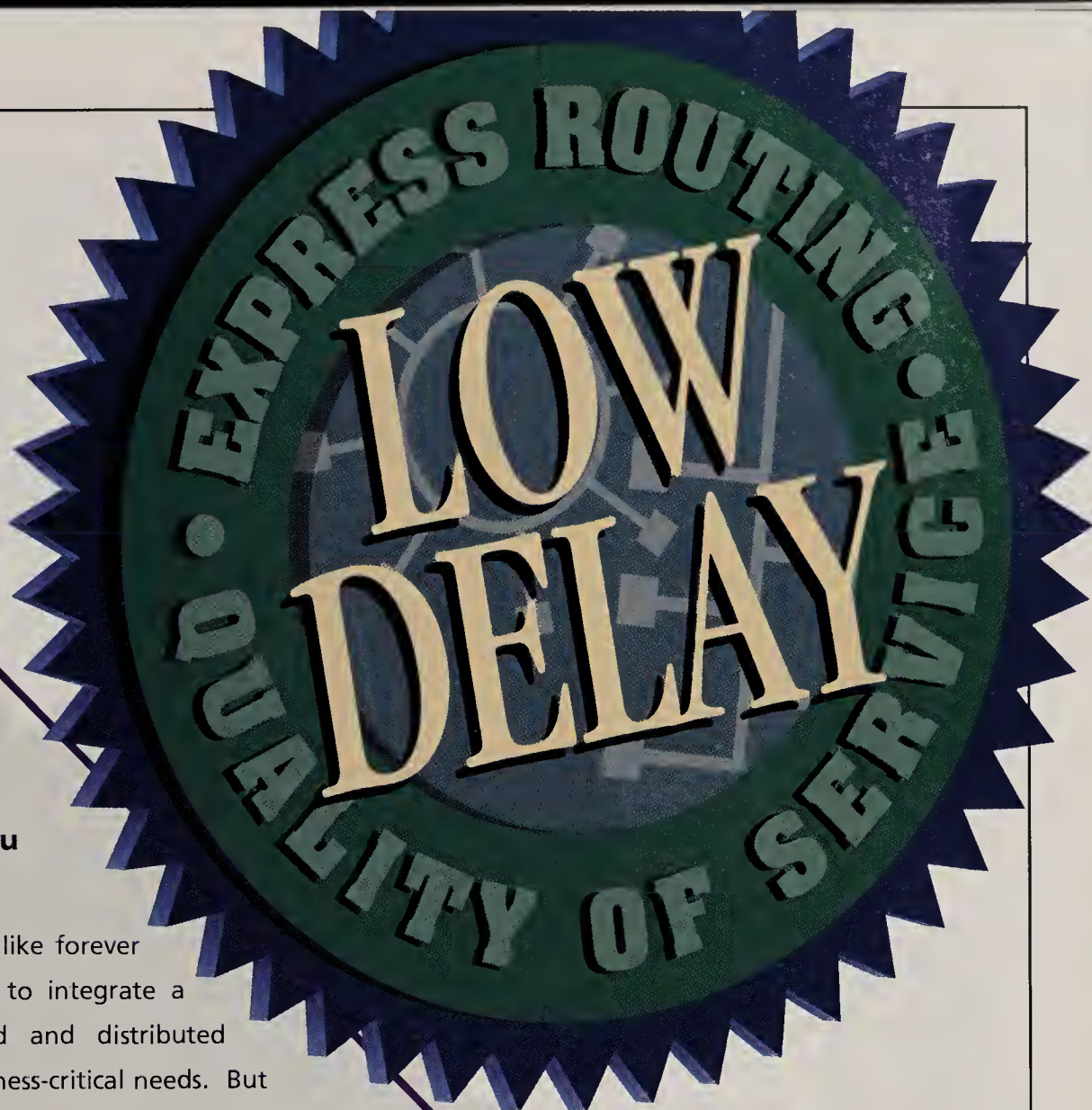
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# The People Factor

In reengineering efforts, it can be the employees—and not the technology—that make or break a project

BY LUCINDA HALATE

**I**t's not surprising that, as reengineering moves from hot new industry mantra to business as usual, a host of critics have stepped forward to point out weaknesses they've discovered along the way. What is surprising is that reengineering guru James Champy is among the first to admit that his original concept could use a little reworking. As the keynote speaker at the CIO Perspectives conference in March, "Managing IT in the Reorganized Enterprise," Champy drew from material in his second reengineering book, *Reengineering*

*Management*. He cautioned IS managers against using the reengineering concept as an excuse for simply replacing people with machines. In addition to looking at the bottom line, he said, "organizations need to deal with the issue of people."

The human component is frequently ignored in reengineering efforts, and that can spell doom for any project. "It's not enough to change only the operational processes," Champy told the 600 attendees at the Westin Mission Hills in Rancho Mirage, Calif. "You must also change the work of management because, with real reengineering, you disperse the work of management out into the workforce."

Invoking the words of Ralph Waldo Emerson, "A foolish consistency is the hobgoblin of little minds," Champy suggested that rather than insist on rigid rules, managers should learn to become comfortable with a more fluid organizational model. That means addressing employees' fears, such as the loss of a job or the need to learn a new one, that result from organizational change and sometimes lie behind employee resistance. "When mobilizing in an environment



ATTENDEES (left), JAMES CHAMPY: *Reengineering shouldn't be used as an excuse to replace people with machines.*



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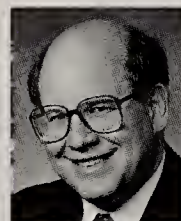
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**SUSAN S. KOZIK:** *Call for thoughtful leadership.*

of uncertainty, you've got to talk the soft stuff, and you've got to turn it into substance," he said.

While Champy acknowledged that reengineering must always lean on the smart use of technology to succeed, he emphasized that IS must not be the primary driver of the effort. "Reengineering is about changing processes and using technology to do it," he said. "But you can't forget that you've got people there as well. You need your management paradigms to reflect that." Without such paradigms, he continued, you will end up with a reengineered organization on the surface and employees carrying on guerrilla tactics of resistance beneath.

But building a technological infrastructure is not enough. That was the opinion of the conference moderator, James C. Wetherbe, professor and director of the Center for Cycle Time Research. In talking about how to implement change in a resistant organization, Wetherbe suggested that CIOs ask three questions before every new technology project. The first—Can you do it?—poses a chal-

lenge for technical geniuses of the IT world. The second question—Can you afford it?—can be answered by the CFO. Question three is the tough one: Will they use it? Tough, because behavior is often unpredictable. Indeed, "people" problems lie at the heart of the reengineering wars these days. If the conference offered any clear admonition, it was that business-process management either flies or crashes in the trenches, where the workers are involved with the new information technologies.

Wetherbe encouraged the CIO audience with a plethora of suggestions for handling some of those issues, or what he calls "the implementation gap": Make adjustments in the development of new IT applications earlier in the process. Use focus groups with end users. Do site visits to other companies that are implementing the new technologies first. Build prototypes. Run pilot programs. Be willing to kill a program if it does not meet your milestone goals along the way. And hand-pick early adopters for your cross-functional teams. Remember, warned Wetherbe, the IT group takes what is private and makes it public; it takes what is informal and makes it formal. The CIO's plan for overcoming resistance must be a part of every IT reengineering strategy.

**I**T practitioners from government and a variety of industries shared their reengineering war stories, too, reiterating some of the human-centered themes that Wetherbe and Champy trumpeted.

Stuart R.L. Smith, general manager of business services for Cheshire, England-based ICI Chemicals & Polymers PLC and

a self-proclaimed "IT virgin" on the CIO conference speaking circuit, spoke of his experiences helping ICI to "de-merge, divest and downsize."

With the old career paths dead and many IS executives worried about key skills shortages in the labor

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**When mobilizing in  
an environment of  
uncertainty, you've got  
to talk the soft stuff,  
and you've got to turn it  
into substance."**

—James Champy

---

force, Smith exhorted his peers to consider examining the IS department's roles. He suggested that IS executives re-evaluate the jobs in IS by focusing on "roles and behaviors" rather than by thinking in terms of traditional IS jobs. Instead of looking at prospective hires as traditional systems analysts and programmers, ICI examines them for their suitability in alternative roles such as technical articulator, intelligent buyer and benefits harvester.

For Michael Dillard, chairman of the information policy committee for the Central Intelligence Agency,



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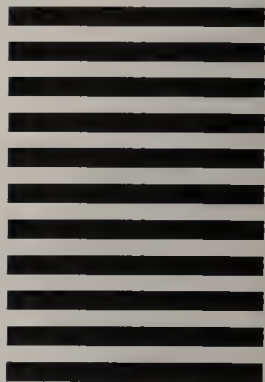
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Making Client/Server Work

the "saturation point" for implementing massive change programs comes not from technological limits but from people. And he should know, for Dillard has instituted a massive reengineering effort, with cultural change so dramatic that the cloak-and-dagger organization is now releasing satellite images on the Internet.

One innovation that Dillard shared with the audience: He created a "PC-ware" store, where managers go to purchase approved equipment with their CIA charge cards. The store encourages managers to purchase from a standard group of products. Instead of the 47 different types of PCs that previously populated agency desks, for example, users now choose from four types of computers.

The difficulties of reengineering—while simultaneously downsizing the agency by 22 percent and merging four separate IT groups into one—have been many. Dillard admitted that he had sometimes felt as if he had run out of steam. "The

**Business-process  
management either  
flies or crashes in the  
trenches, where the  
workers are involved with  
the new information  
technologies.**

more we reengineer," he said, "the more the pain goes up. And I begin to ask myself at that point, 'Why am I in the IT business?'"

The answer to that question came easily to the CEO and chairman of SafeCard Services Inc., Paul Kahn. To him, being the leader of change has its rewards as well as its headaches. Kahn, who began his career as a programmer in 1963, served to remind the CIO audience that programmers-turned-IS-executives can become chief executives, too.

Kahn identified three keys to his success in leading IS-driven change and IS-enabled startups: He had a drive for perfection; he used technology as a tool to change the rules of the game in business; and he kept the programmers, analysts and customer-service representatives who worked for him happy.

Susan S. Kozik, vice president of technology services for CIGNA Systems, advised the audience that keeping employees delighted during tough times requires innovative ideas and thoughtful leadership. At CIGNA, Kozik facilitated a downsizing of the systems staff, from 4,800 to 3,200, while the workload rose 55 percent. She decided to shift the IS department's goals to reflect a business mind-set that was changing from a financial focus to a customer-service focus. For example, Kozik's department used to track lost network availability by monitoring downtime. Now it tracks business productivity lost as a result of the system outage. The old measure was internally focused; the new measure is outwardly client-focused and expressed in real dollars instead of arcane IT metrics.

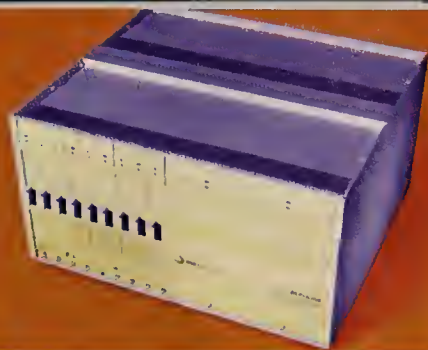
Kozik lit a fuse under the audience as well when she talked about a new customer-service model that she is implementing for CIGNA's help desk. Borrowing from the consumer direct-services business, Kozik divided her staff into color-coded teams, with one team answering the phone and diagnosing problems, one handling hard problems, one working on the hardest problems and one focusing entirely on product development.

The key message of the conference was this: Build IT. Reengineer IT. Innovate and market IT. But, to borrow from Winston Churchill: Never, never, never, never—in nothing, great or small, large or petty—never forget the human element. **CIO**



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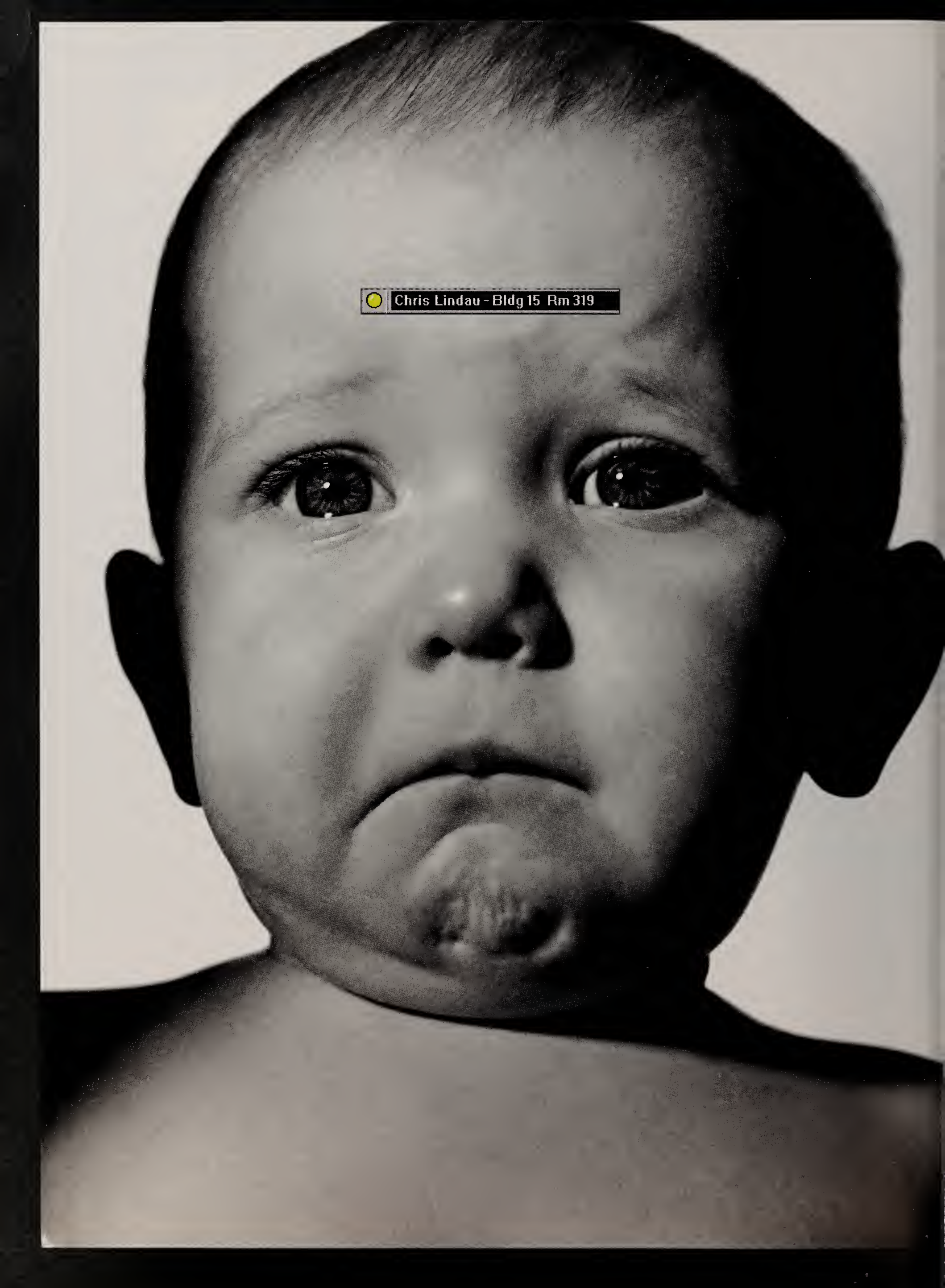
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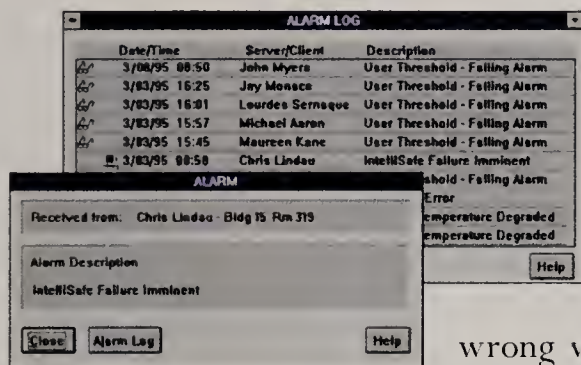


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**DAVE LANGENDONK** and **RICHARD DAVIDSON** (inset) are cooking up an elaborate, all-encompassing system to support Whirlpool's global design efforts.

# Forging a GLOBAL Appliance

With international business booming, Whirlpool is creating an online system to link its designers around the world. The system will bring about profound changes in the way people work. To make sure it gets it right, the company has already invested two and half years in its planning.

BY CAROL HILDEBRAND



**W**HEN EMPLOYEES AT TWO Whirlpool Corp. design and manufacturing centers (otherwise known as tech centers) started developing rudimentary systems in 1992 to manage the flow of engineers' CAD drawings, they didn't realize they were starting a global design revolution for the company. "We had a very simple system that just took care of [online management of] drawings," says Albert Larey, manager of technology services, cooking products, at the center in Dayton, Ohio.

Larey and his counterpart at the St. Joseph, Mich., center were working on similar projects independently. When their requests for funding wended their way up to Steve Holmes, Whirlpool's North American vice president of manufacturing, Holmes realized that the appliance maker could reduce product-design cycle time and improve quality by moving design teams away from the existing process, which relied on paper and kismet, to a more structured online system.



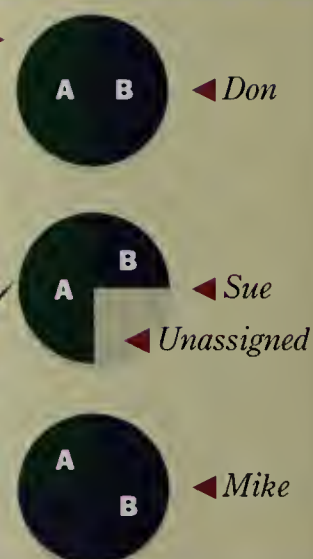
**L**angendonk and Davidson put together a complex organization of global and local steering committees to make sure they produced a system users wanted.

Whirlpool's global imperative is fairly recent. In 1987, when David Whitwam became the chairman and CEO, the company had very little international presence: Less than 4 percent of the then-\$4.2 billion company's revenues came from overseas. Most of the design work was done domestically at technology centers that were fairly close together, so the logistical problems involved in uniting the design teams were fairly simple. Since then, however, Whitwam has turned the company into the world's number-one appliance maker through numerous European and Asian acquisitions. (Last year, the company derived almost 40 percent of its \$8.1 billion in revenues from international sales.)

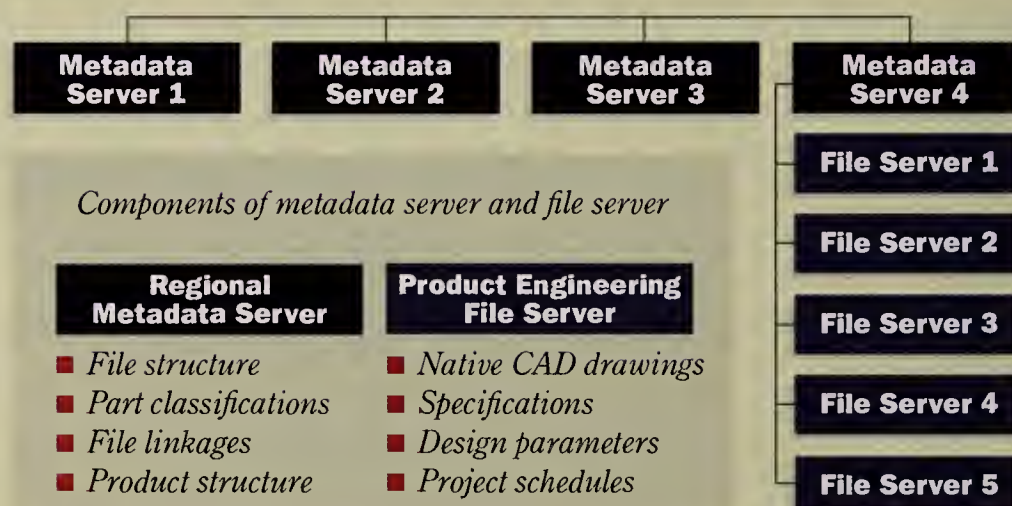
But Whitwam's global schemes have thrown a spanner into the design works. Rather than letting each region operate autonomously, he wants to combine all these far-flung talents to achieve breakthrough performance. In an interview in the March-April 1994 *Harvard Business Review*, Whitwam says, "Our vision at Whirlpool is to in-

**W**hirlpool's PDM project is divided into five modules that will manage the flow of information during the product-design cycle.

Division of personnel's time on Projects A and B



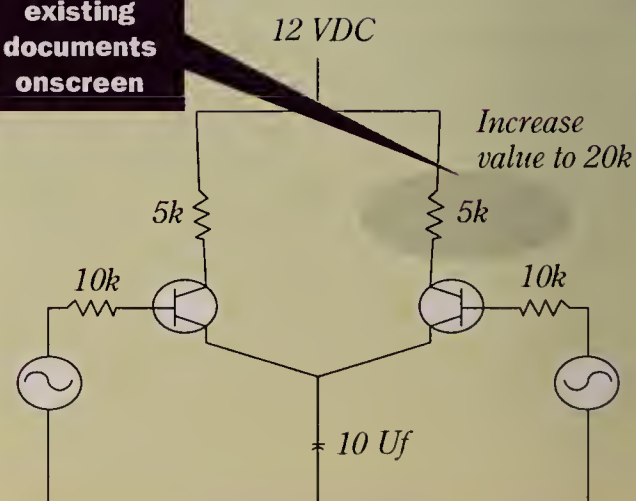
Resource histogram provides quick breakdown of personnel availability



**File management** uses an electronic vault to manage the locations of online files (drawings, specifications, bills-of-material, test data, schedules and the like) basic to the design process. It provides access control, search capabilities and a history of file revisions to analyze changes.

Engineers can use the **online drawing, viewing and markup** capability to look at a picture onscreen and note proposed changes or add comments. The marked-up copy is electronically linked to the master so that designers can track changes.

Engineers can amend existing documents onscreen



# Pentagon

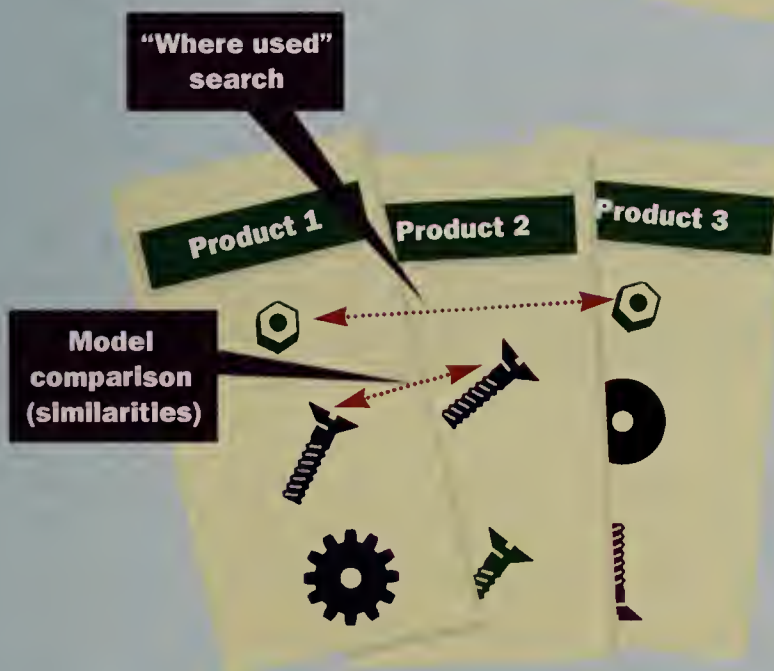
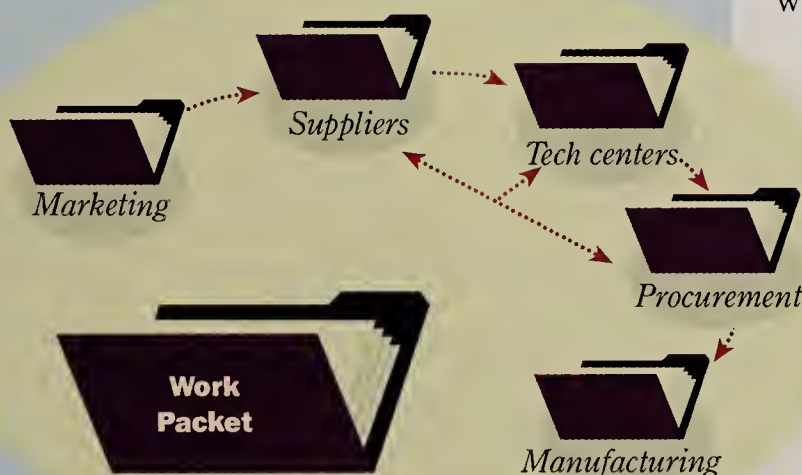
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| Task      | Personnel | Time  |
| 1         | Don       | _____ |
| 2         | Sue       | _____ |
| 3         | Mike      | _____ |

| Project B |           |       |
|-----------|-----------|-------|
| Task      | Personnel | Time  |
| 1         | Don       | _____ |
| 2         | Sue       | _____ |
| 3         | Mike      | _____ |

◀ **A project management component manages project activities, resources and schedules and, in concert with the workflow manager, coordinates the routing and timing of project activities.**

**Project managers can monitor workflow and schedules**

**The workflow management module** divides information into "work packets" and manages the routing and flow of these packets throughout the design process. When one engineer signs off on a drawing, it automatically goes to the next link in the design chain and alerts that employee through an e-mail notification.



◀ **Engineers can compare one model with another and save money by reusing parts. Product-structure management links product design with the bill-of-material structure. It maintains associations between files and parts: for example, component assembly with associated bill-of-assembly information and drawings.**

**"It became evident that we needed something standard that would go globally."**

—Albert Larey



tegrate our geographical businesses wherever possible, so that our most advanced expertise in any given area—whether it's refrigeration technology, financial-reporting systems or distribution technology—isn't confined to one location or one division. We want to be able to take the best capabilities we have and leverage them in all of our operations worldwide."

But absent an electronic means of uniting geographically dispersed design teams, Whirlpool was forced into such expensive solutions as flying members of each team to one physical location, says Dave Langendonk, program manager for the technical computer services department. He recalls one washer design project where Whirlpool relocated engineers from Brazil, India and Mexico to Michigan for half a year.

**F**aced with a challenge to keep design work global and workers local, Whirlpool has answered with its product-data management (PDM) project. A cornerstone of the Benton Harbor, Mich., company's globalization effort, the massive initiative will indirectly affect each of



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# Supplier Try-Outs

The companies competing for Whirlpool's PDM contract underwent a rigorous evaluation process

**A**fter Whirlpool's evaluation group narrowed down the list of prospective PDM vendors from 50 to two, they asked the finalists—Hewlett-Packard Co. and Sherpa Corp.—to bring in their offerings for a three-month pilot program.

The entire project is now run by a global steering committee that meets quarterly to direct the implementation. The committee works closely with Workgroup Technologies' project team; below that group, each global division—Europe, North America, Asia and Latin America—has its own steering committee. North America, which is piloting the implementation, has also created grassroots implementation teams at the local level that mirror the corporate teams. The goal, says Davidson, is to gather as much company input and support as possible.

Steve Paddock, general manager of refrigeration technology at the Evansville, Ind., center where the project is in pilot mode, says that he has put three of his engineers to work full time on the project. He also laid the groundwork for change acceptance by involving at least 10 percent of his workforce in planning and brainstorming for the process changes. A group representing a vertical slice of Paddock's organization, from directors to technicians, met off-site every

The idea, says Richard Davidson, director of information technology for North America's manufacturing and technology division, was to load the software with real Whirlpool data and simulate a working environment as closely as possible. "We had a formal script," he says. "We wanted to test things like the workflow, data vault, integration capabilities and user interface."

The vendors eventually got the software up and running, and the centers evaluated it from January to April of 1994. Whirlpool then ran what Davidson calls its final exam. They asked the vendors' technical personnel to leave, and a Whirlpool team sat down and, "basically, tried to break the product," he says. "We wanted to see what it was like to have users just sit down and use the tool." The team was not fully satisfied with either product; the user interfaces of both were diffi-

cult to navigate. Still, with some reservations, they decided on HP.

It was at about this time that Workgroup Technologies Corp. appeared on the scene. Davidson says he was reluctant to reopen the evaluation process, but a visit to Workgroup user Eaton Corp. changed his mind. "Two things were appealing," he says. "The easy user interface and its ease of implementation." When he asked Eaton executives who put in the system for them, for example, he was amazed to hear that they did it in-house. Davidson's group had Workgroup come in for its own test drive, and Whirlpool was sold. While HP's product was actually stronger functionally, Davidson says that Workgroup's ease of use made the difference. "With the other products, we were considering spending big bucks on an integrator just to redesign the front end." —C. Hildebrand

Monday throughout 1994 to redesign Evansville's processes to fully exploit PDM; each center will follow suit as it reaches the implementation stage.

they will bring online in phases up to the end of 1996. The rollout will proceed first in North America and then in Europe and the other geographic



**"T**his is a huge undertaking. We probably don't even understand fully how complex it's going to be. But for us to go global, we have to do this. It's not something we see as a choice."

—Steve Paddock

With such heavy user involvement, Paddock says, "the project isn't viewed as a top-down measure."

Even with general acceptance from users, rolling out PDM is a daunting task that will take two to three years. Davidson and Langendonk have broken the project into modules, which

locations, which will lag four to 10 months behind.

"This is a huge undertaking," says Paddock. "We probably don't even understand fully how complex it's going to be. But for us to go global, we have to do this. It's not something we see as a choice." **CIO**

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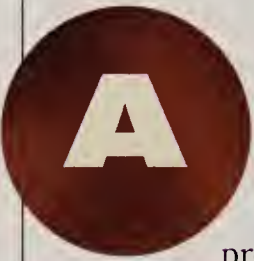
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# PERSONNEL MATTERS


**A**

generation ago, the typical personnel department screened resumes, interviewed job applicants and processed paperwork for such routine events as merit-based pay raises and annual promotions. For the most part, the homogeneous workforce under its sway could reasonably expect lifetime employment and a decent pension in return for meeting stated job requirements.

In most organizations today, the personnel function has given way to human resources management, a name that reflects the changing nature of its role. True, many HR managers are still responsible for handling traditional administrative tasks, but that's the least of their duties. Consider that a typical workforce comprises a diverse population of full-timers and part-timers with a wide range of skills and needs. It's the job of HR professionals to enable downsizing, accommodate flexible schedules and administer a host of new programs for compensation, benefits and training. In addition, HR has to keep track of a veritable alphabet soup of legislation and regulations. Trying to stay on top of the EEOC, ADA, FMLA, ERISA, COBRA and OSHA—not to mention HMOs, PPOs and 401(k)s—is enough to make any HR professional occasionally yearn for the bygone days of pencil pushing. Like other departments suffering from informa-

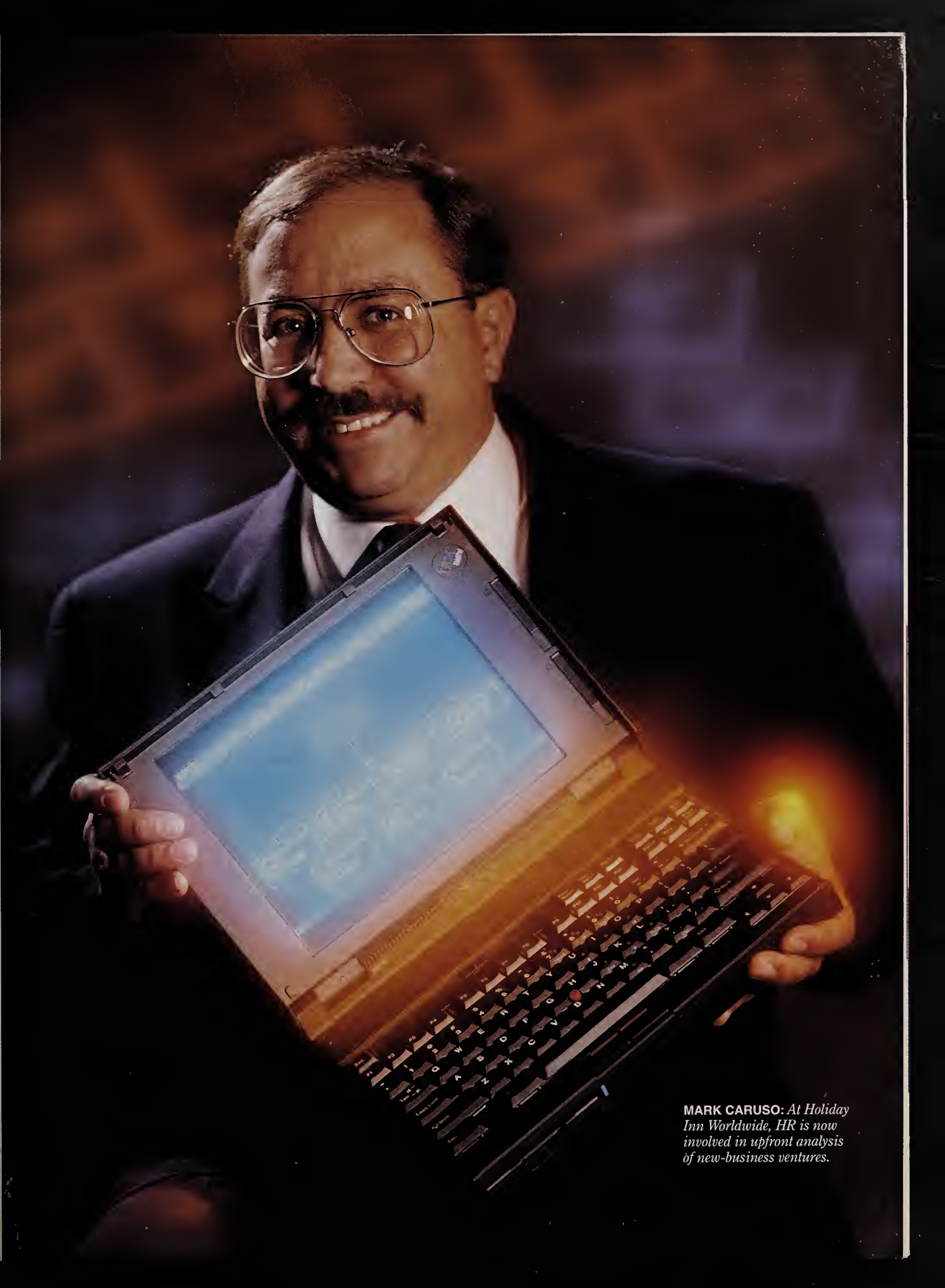
The pencil-pushing personnel office of yesteryear is no match for the challenges of managing regulatory compliance and overseeing complex benefit plans for today's highly skilled workforce. Enter human resources management, fully armed with IT.

BY MEGAN SANTOSUS

tion overload, HR has turned to IT to help manage the overwhelming amount of data the job now requires.

In addition, however, IT is enabling many HR departments to move beyond personnel's administrative legacy to take on a much more strategic role in the company. In many organizations, HR and IS are collaborating on enterprisewide—often client/server-based—systems that are designed to provide management with critical information about workforce issues. As a result, many HR departments are vaulting from the shadows of the back office into the upper ranks of their organizations.

According to Rob Thurston, president of the Human Resources Consulting Group Inc. in Salt Lake City, the breed of technology known as human resources information systems, or HRIS, is one of the fastest-growing segments of the IT market. "Downsizing is changing how companies operate," he says. As organizations become flatter and competition for skilled employees grows more intense, companies devote more resources to attracting the best and the brightest, offering innovative benefit plans, compensation packages and work arrangements. And when more work is expected from fewer warm bodies, the HR function has to be much more creative in managing an organization's human assets.



**MARK CARUSO:** *At Holiday Inn Worldwide, HR is now involved in upfront analysis of new-business ventures.*



**DEWEY INGHAM:** *Donnelley now offers employees a wider palette of investment options, thanks to IT.*

The most effective HR professionals, says Thurston, "are becoming data managers and advanced-technology innovators." Technologies such as ad hoc report-writing systems, interactive video training, touch-screen applications and voice-response systems can be used to manage policy updates, track compliance with regulations and educate employees.

Thurston and many other consultants also contend that HR processes should be among the first targets of reengineering. Many HR staffs, for example, spend far too much time and energy repeatedly fielding the same questions about complex

benefits. Yet employees need accurate information about ever-changing policies. Some organizations are streamlining this process by consolidating the functions of far-flung HR staffs into centralized, IT-supported sites, while others are using technology to give employees direct access to benefit and policy information. Both approaches result in better service, and that translates into satisfied employees who are more likely to attract and retain satisfied customers.

But creating happy workers isn't most companies' only—or even their primary—goal. Ed Kozem-

chak, a principal of the human resources technologies group at Coopers & Lybrand LLP in Parsippany, N.J., believes that an HRIS also can have a significant impact on an organization's strategic and bottom-line performance. "Executive-information and decision-support systems enable a new science that we call human-resource econometrics," Kozemchak explains. "It's a scientific approach to assessing issues that surround HR decisions." For example, HR can use decision-support technologies to scrutinize employee-satisfaction survey information and track how morale affects customer satisfaction. Similar technology can also be used to analyze benefit plans and control costs. But HR personnel harness the greatest benefit from technology, according to Kozemchak, when they use it to inform "strategic decisions regarding hiring, training and retaining employees."

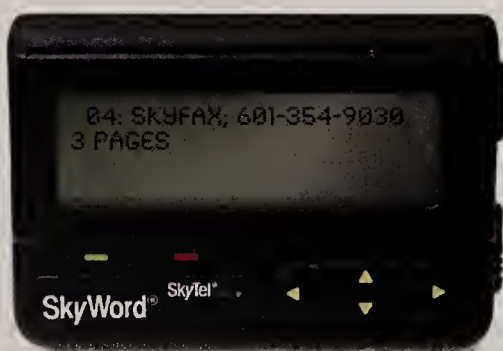
### **Becoming Strategic**

At Holiday Inn Worldwide, technology is enabling HR to step up and become a strategic partner, if not a visionary. Because a hotel's reputation hinges on the level of service provided by its employees, managing human resources for the Atlanta-based chain of almost 2,000 hotels in 60 countries has always been a critical task. But HR's involvement in establishing strategic direction has expanded with the growing importance of IT.

"Two years ago, whenever we looked into a new-business venture, financial implications would be looked at first," says Mark Caruso, vice president of worldwide human resources development. Viability from an HR perspective wouldn't be considered until much later in the process. By that time, finance may have spent considerable time and resources looking at deals that had no chance of getting off the ground, because the necessary personnel skills were not in place. But that has changed now that HR can track executives' experience and skills using PC-based relational software from



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HRSOFT Inc. of Morristown, N.J. "With the technology we have," says Caruso, "there's an advantage to having HR at the table at the start, and we can play a key role."

Technology is also helping Holiday Inn enhance career development for its top 125 corporate executives and key operations personnel at each hotel. "The problem with doing a good job of [career development and] succession planning is managing all the data that's involved," says Caruso. The HRSOFT application allows the company to store a detailed resume for each executive—including work history, education and special skills—in a customized format. Say there's an opening for someone with a background in marketing and finance who also speaks French. A manager can query the database and get a report of all qualified candidates in minutes.

The system also enables Holiday Inn to measure the effectiveness of its career-development program, a capability that wouldn't be possible without the technology, Caruso notes. "There's a natural tendency to keep good people in the same position," he says. With the system, HR tracks the earliest and latest possible dates on which employees should be moved to another job, based on the opinions of their line managers. "If we hit that window," says Caruso, "it's a measure for how well we're doing." Holiday Inn certainly needs to keep track of such progress; over the next four years, the company plans to build, acquire or convert 1,000 additional properties. "With one new hotel being added every 26 hours somewhere in the world," Caruso says, "we have big human resource requirements."

#### Enhancing Employee Services

Human resources departments don't just look after current employees; they must frequently deal with former ones as well. These people may continue to receive medical or other benefits long after they've migrated to Miami, and they often need help tracking down the right forms and

filing them properly. The problem is compounded at a sprawling enterprise like Chicago-based printing company R.R. Donnelley & Sons. With plants in every major metropolitan area in the country, retirees may have worked at several locations over the course of their careers, and thus have difficulty locating someone who knows who they are, let alone how to help them.

Although Donnelley has traditionally dealt with benefit support on a divisional level, the company is experimenting with a centralized retiree information center. Donnelley's 5,000 retirees now can call a toll-free number and use voice-response technology to get their questions answered and request medical forms by punching in their Social Security and personal identification numbers (PINs). Previously, retiree services had been handled at each plant; retirees seeking assistance would first contact the facility at which they had last worked but often had to make several calls before finding an HR representative who could access their complete employment history. Based on the success of the new round-the-clock system, which handles 50 to 60 calls per day, the company is developing a similar system for its 35,000 current U.S. employees.

In addition, the company is using self-service technologies to give employees access to information on training programs and performance reviews as well as any corporate policy changes. And in 1991, the company introduced a voice-response system so that employees could inquire about the corporate savings plan. "As we updated the plan, our employees loved the technology and wanted increased functionality," says Dewey Ingham, vice president of compensation and benefits. HR added transactional processing to the system, and employees now use video phones available at each plant to make contributions to any of the eight investment funds offered by the company. "Without the technology, we could never handle the variety of funds," says Ingham. "The value to us is that we can build on our platform to give employees what they want."

#### High-Tech Hiring

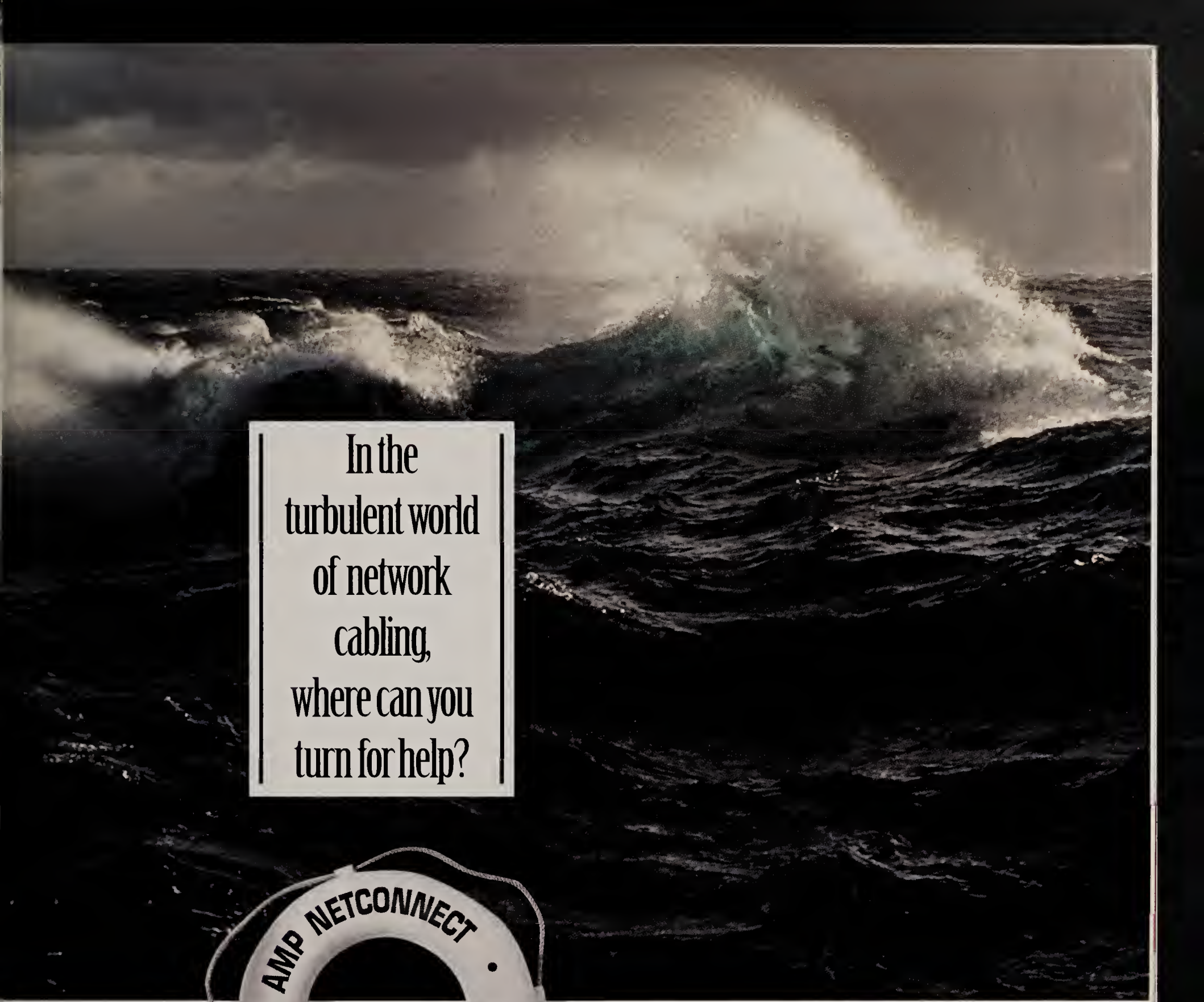
One of the downsides to rapid growth is the difficulty of finding enough qualified employees. For Tellabs, a telecommunications-products company based in Bolingbrook, Ill., the problem is exacerbated by the high level of skills required.

To recruit employees, Tellabs is



DAN STOLLE: Job applicants fax or e-mail resumes directly into Tellabs' resume-processing system.

PHOTO BY MARC BERLOW



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using a resume-processing system from Resumix Inc., of Santa Clara, Calif., to "do traditional kinds of searches and sorts of external candidates," says Dan Stolle, director of human resources. Candidates responding to job postings in newspapers or on the Internet can fax or

employment process—including job posting and scheduling interviews—online to make information available on managers' desktops.

#### **Cutting Cost, Not Quality**

St. Joseph Health System in Orange, Calif., has relied on IT to support

Porath, vice president of corporate services. Among other things, the system enables hospitals to electronically track labor costs as well as revenues, making the once-manual process more accurate.

"There's a lot of potential to implementing HR technology, but it takes much longer in terms of time and money than you realize," Porath says. "The benefit of an HRIS that leaps immediately off the page is that it does increase the operating efficiency of an HR department. However, we found it next to impossible to reengineer the department and introduce technology at the same time."

But Porath believes that by providing managers much more detailed HR and payroll information in an easy-to-use format, the technology will enable St. Joseph to become more efficient and cost-effective, while ensuring that quality and a customer focus remain priorities. "This system will help us achieve the strategic direction we're striving for," he says. "Without it, the HR function would remain simply a personnel administrator and record-keeper."



**TONY MARAVOLA:** *Technology is taking HR out of the form-approval loop at Baxter International.*

e-mail their resumes directly into the system. The Resumix system also enables HR managers to prioritize skills and makes use of artificial intelligence to distinguish, for example, between a Harvard Street address and a Harvard University degree. If C++ proficiency is in demand, the system will pull up resumes ranked by relevant experience. A candidate with five years of C++ programming under her belt will rate higher than someone who took a C++ course in college.

The HR group is now exploiting the system further by using it to track the skills of current employees. "The rationale is that we need to be quick in terms of putting together new-product development and release teams," Stolle says. "The strategic implication is that we can be more productive and get our products to market faster."

According to Stolle, Tellabs eventually would like to put the entire

HR's payroll efforts since the mid-1970s. But when competition in the health-care industry heated up, the hospital chain's aging legacy system proved a useless weapon in the battle to cut costs without sacrificing quality.

"We had a home-grown payroll system that was about 20 years old and could no longer give us the flexibility we needed," says Gail Grzelczyk, manager of support for corporate IS. "The hospitals were not able to get timely information and report on it."

Two years ago, St. Joseph moved from a centralized to a distributed client/server environment to upgrade the payroll system and automate HR processes. The hospital chain selected a package from Genesys Software Systems Inc. and standardized on Compaq PCs and servers linked with a Novell network. "Along with the distributed payroll, we're getting a brand-new HR system," says Tom

#### **Beyond the Traffic Cop**

Not long ago, when a manager at health-care company Baxter International Inc. wanted to raise a deserving employee's pay, approval had to wend a tortuous and paper-filled route through HR. Instead of a department offering help, managers viewed HR as "a speed bump that slowed them down," recalls Tony Maravola, Baxter's director of employee systems. What they wanted, he says, was a department unencumbered by personnel "administrivia" that could serve as a strategic consultant to their business units.

To move HR beyond the role of administrative traffic cop, the Deerfield, Ill.-based company is applying technology in two ways. One system utilizes PCs, kiosks and voice-response technology to empower employees and managers to perform their own administrative tasks, such



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as changing addresses or approving training courses. The second system, a Windows-based toolkit called HRTK, allows HR professionals and line managers to access and analyze employee data at the point and click of a mouse and retrieve information on group and individual performance in a few keystrokes. To prevent unauthorized access to sensitive information, users must enter their Social Security numbers and a six-digit PIN number to tap into the system; an additional level of security protects access to the server itself.

Baxter's new EPIC system, an employee personal information center, will handle every aspect of HR administration from payroll and benefits to tuition reimbursement and job posting. Designed by Essense Systems Inc., a provider of employee self-service applications in Peabody, Mass., EPIC features kiosks, PCs and voice-response technology. For example, employees can go online to register for training classes or change withholding information on their W-4 forms—a process that used to take weeks. "EPIC will let management and employees input their own data and take HR out of the loop of approving and routing their own forms," says Maravola. The system is being piloted at Baxter's corporate headquarters, with rollout to 120 sites scheduled for the end of this year.

By removing administrative roadblocks and putting more information in the hands of managers, HR now has the time and the data to support strategic initiatives. Helping define workplace skills for the future as the company embarks on a globalization effort and devising ways to recruit and train employees to fill those needs are just two areas in which Baxter's HR department plans to take a leading role.

#### **Freedom from Paperwork**

When the Washington-based National Association of Securities Dealers (NASD) decided in 1993 to purchase an HR system from PeopleSoft Inc. of Walnut Creek, Calif., it didn't do so just for the fun of im-

## **Five Hints for HRIS Implementations**

### **1**

**Create a project team upfront that includes representatives from HR and IS. If the IS group does not have expertise in a particular technology, hire a consultant with relevant experience.**

### **2**

**List attributes of any HR-related systems that are in place. Make note of what the systems do well, what needs improvement and what functionality is missing. Pay particular attention to the existing functionality so that it's not lost when replaced by a new system.**

### **3**

**Before meeting with vendors, put together a requirements document that can be used to script a customized product demonstration. Never base a purchase decision on a canned demonstration.**

### **4**

**During a demonstration, all members of the evaluation team should be present. Don't break up the meeting by having payroll employees evaluate payroll functions and HR staffers review HR functions. If integration is a goal, everyone should be around for the entire demonstration.**

### **5**

**Hold a debriefing session as soon as possible after each demonstration. Everyone who participated should sit in on the debriefing while the demonstration is still top of mind.**

*Source: CDG and Associates Inc.*

plementing a client/server architecture. According to Diane Martin, director of program management in NASD's Rockville, Md., office, the association selected the technology on the basis of its ability to support NASD's ultimate vision of HR. "We want to free people up from a lot of paperwork so they can focus on the value-added aspect of HR," she says.

NASD's need for training in areas such as team-building and leadership skills has grown tremendously, for example, so HR needed an efficient way to track and administer programs for its 2,600 employees located in 13 district offices and three data centers. In addition, the technology had to enable line managers to carry out some administrative personnel tasks without the intervention of HR. Eventually, workflow applications will be used to conduct performance evaluations, manage job postings and approve training courses online.

The move to client/server has required training for personnel in the use of the technology even as it enables HR to redefine its role. "The initial implementation was the biggest challenge," says Martin. "We struggled with getting the infrastructure and knowledge in place because a lot of people only had experience using PCs like dumb terminals." Cross-functional project teams made up of both HR and IS representatives have helped facilitate implementation of new technologies.

Once the HR system is integrated with e-mail and workflow technologies, HR personnel can get out of the business of pushing paper and get involved in strategic planning. For instance, when a business unit undergoes reorganization, HR would like to participate in organizational development efforts such as defining new job descriptions. With the infrastructure in place, the HR department is now in the process of restructuring itself. "We're looking at how HR can position itself to improve processes and provide the best service," says Martin. **CIO**

**The earth** *is flat.*

*The moon* **is made of green cheese.**

**Fault Tolerance** *is too expensive.*

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# TRAFFIC REPORT

**E**ven by the hyperactive standards of the Internet, 1994 was a remarkable year. Traffic on the National Science Foundation's NSFnet grew 15 percent a month, a rate of annual increase of 500 percent, up by half again from the historic average of 10 percent per month. (The NSFnet is a backbone service—meaning one that carries messages among local or regional networks.) The load on Sprintlink, another backbone service, grew by 800 percent last year

to an average traffic of more than 100Mbps. Some corners of the Internet were hotter than that.

## STORYLINE

**There's fog in the valleys and black ice in the hills. But that isn't keeping those scads of new users from heading out onto the Internet. A few questions on everyone's minds: Is the Internet addressed for success? Can it cope with the flow of traffic—at the present moment and into the future? Will it choke on the graphics-rich World Wide Web? Should you risk your corporate image on a bet that gridlock won't occur? The early answers, at least, appear encouraging.**

An outsider surveying these trends—especially a CIO thinking about rolling out an Internet application sometime in the middle of 1995—might well wonder whether the information superhighway is about to seize up in massive gridlock. Experienced Net citizens wave off such concerns by pointing to the long history of 'death of the Net' predictions; but every real-world exponential curve saturates eventually. Besides, while annual capacity increases of 500 percent are not unprecedented on the Net, neither are episodes in which sections lock up as tight as the L.A. freeway on a Friday afternoon. When California Institute of Technology's Jet Propulsion Laboratory put the images of Comet Shoemaker-Levy 9 striking the planet Jupiter up on its World Wide Web site, traffic died all over the West Coast.

Net load is a multiple of users times bytes pushed back and forth per average session hour. While the first factor gets most of the press (it is said that a million new Internet-accessible e-mail accounts appear every month), the sec-

ond is what is pushing up traffic. Until 1993, interacting with the Net was slow and error-prone. Finding desired site addresses and file names was often an uphill struggle, and remembering and typing them in correctly was not much easier. In that year, a new suite of programs appeared that allowed any site, file or data object anywhere on the Net to be connected to any other object, file or site. Once these connections were made, subsequent users could hop ("Web-surf") from anywhere to anywhere with the press of a mouse button. The sole disadvantage of these new browsers is that they rely for their look and feel on a rapid, continuous flow of file transfers. This flow represents a huge increase in traffic per user session over traditional Net functions such as reading newsgroups or exchanging e-mail.

BY FRED HAPGOOD

At the end of 1994, more than 1 million people were Web-compatible; by the end of this year, the number of Web surfers could easily be 10 times that. Many of the online-services companies, not to mention the hundreds of companies selling straight Internet access, vigorously promote Web access as a core product offering. The exploding universe of Web sites—commercial and noncommercial, foreign and domestic, now over 10,000 and climbing—guarantees a Webscape that is steadily more entertaining and attractive.

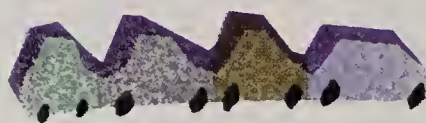
Several secure and convenient financial-exchange systems are being readied to support Web commerce. As of last month, the NSF was scheduled to withdraw from the backbone business altogether, forcing the traffic it is carrying now to find other distribution channels. All during 1995, users will be upgrading to 28.8Kbps modems, often from 2400- and 9600-bps models. All these trends, multiplied together, would seem to give a potential Internet user reason to ask if 1995 might not go down as the year when the Internet finally trampled itself to death.

**T**his tsunami is going to fall on a nested hierarchy of three networks: the phone system, the Internet and the Web. Each of these, in sequence (think of a stack of turtles with the smallest on top), forms the infrastructure of the next.

The Web is defined by hypertext logic and is executed by browsers and servers: When you hit a link on a Web page, the server running that site tells your browser how to make the desired connection. Increasing capacity at the Web level means increasing the number of servers. This is the least problematic dimension of Net expansion, since the cost of server space is falling rapidly. (As of this writing, Web sites can be rented for as little as \$10 per month)

The middle layer, the Internet proper, is defined by an address protocol and routing tables, and is executed by servers, routers and leased lines. Servers break messages into bits, label each bit with destination

**A survey of those working at ground zero reveals considerable confidence that the Net will survive the year, partly because of the general shift of the industry into optical fiber.**



and sequence information, mix together the packets from many different communications and pour them all into the same circuit, like cars on a highway. Every time a packet reaches a junction, it passes through a router. These machines read the addressing information, check the data against routing tables held in memory, and shuttle the packet off in the specified direction.

Since both routing and carrying offer considerable economies of scale—often twice the money buys five times the functionality—the Net has developed hierarchically, like a circulatory system, with small pipes feeding large ones and large ones swapping traffic at exchange points. The commercial structure of the Net follows these divisions: Internet service providers (ISPs) own and operate the large pipes, or backbones; Internet access providers (IAPs) run the small pipes. The latter buys a “feed” from one of the service providers and retails that connectivity to individuals and companies. There are between 600 and 700 IAPs, a half-dozen exchange points and about 20 backbones distributed among seven or eight ISPs. (A searchable directory of these businesses is available at <http://www.internic.net/internic/provider.html>.)

The bottommost turtle in this stack, the phone network, rests on a methodology called circuit switching, in which circuit links are assembled and then assigned to the support of a single connection for as long as the users’ phones are off the hook. This network runs on central-office switches, copper wires, microwaves and, increasingly, glass fibers.

Keeping the Net running beyond 1995, assuming the expected traffic levels materialize, will mean enlarging the capacity or speed of all the layers and sectors described above—little pipes, backbones, exchange points, servers, routers, routing logic, switches and fibers—simultaneously, and by factors of as much as 10.

A survey of those working at ground zero reveals considerable confidence that the Net will survive the year, partly because of the general shift of the industry into optical fiber. Fiber has enormous inherent capacity: Even with current technology, it is possible to put 2.4Gbps through a single 100-micron strand—about six times the capacity needed to carry all Internet backbone traffic at the rate posted in the fall of 1994. (The theoretical bandwidth limit in fiber is an incredible 75,000Gbps.) Thus, once fiber is installed, any foreseeable surge in traffic can be managed by ordering and installing more-powerful input/output electronics. This is a much faster, cheaper and more-flexible upgrade path than laying new cables or building new microwave towers.

Higher traffic rates also require faster switches. Fiber is helping out in this department as well by permitting engineers to combine the advantages of packet routing and circuit switching. Packet routing conserves bandwidth but spends computations lavishly, since it relies on routers reading and rereading the address and schedule information of every packet at every junction. Since a given packet might pass through two dozen routers, the time required for all this checking adds up. Circuit-switching allows information to pass from one end of the circuit to the oth-



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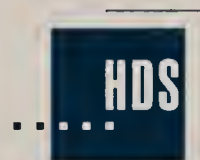


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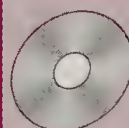
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er without any address or schedule checking (since the circuit is dedicated to that single communication, the checking would be redundant), but it wastes bandwidth, since few communications need an entire circuit.

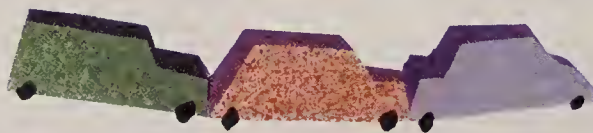
Fiber technology also allows for much faster switching speeds. The medium has a very low intrinsic noise level, permitting much simpler message-handling procedures than would work in, for instance, cable. These routines are so simple they can be built in at the hardware level, speeding operations enor-

end circuits, they can guarantee total transit times, or latency, which packet routing cannot do. When routers get congested, they just let the excess packets die. Eventually, the error-checking protocols running on the next downstream router will notice the missing packets and ask the originating transmitter for a resend; but by then large fractions of a second might have been lost. (If a path runs through several congested routers, delays can aggregate to several seconds.)

Latency delays are not a problem

storage for bandwidth by caching the most popular Web pages locally, thus taking the burden of repeatedly retrieving the same files from their service providers.

**Investment is pouring into the Net. Access provider Netcom Inc. is selling at 12 times its revenue stream. MCI is quadrupling its backbone capacity. Net-99, a new service provider, is building an all-ATM backbone. Cyberspace is crowded with construction cranes, and many analysts believe that the rush of investment has only begun.**



mously. One use of these greater speeds is to increase bandwidth: Current ATM switching technology supports aggregate bit rates into the tens of gigabits per second, per-port rates of 2.48Gbps and millions of packets (called cells in the ATM world) per second; this is thousands of times the capacity of a contemporary router. Daniel Abensour and Barbara Leonard, program directors in IBM's Networking Hardware Division, estimate that the technology can be pushed as high as 100Gbps.

This allows ATM switches to achieve the advantages of routing, such as bandwidth conservation and time savings, without losing those of circuit-switching. Since ATM switches can set up end-to-

with conventional Internet applications such as e-mail and news, but they do erode the quality of real-time multimedia applications like voice traffic, teleconferencing, audio and video. One of the big advantages of guaranteed, straight-path bandwidth (and therefore ATM switches) is that such circuits can carry anything, allowing investments to be recouped from many markets.

The ease of upgrade of switching and carrying devices is not the only reason for confidence in the Internet's near-term future. Router manufacturer Cisco Systems has announced new routers that are 10 times faster than its current models. In addition, the continuing drop in storage prices makes it possible for access provider companies to trade

**I**nvestment is pouring into the Net. Access provider Netcom Inc. is selling at 12 times its revenue stream. MCI is quadrupling its backbone capacity, from 2.5Gbps to 10Gbps. Net-99, a new service provider, is building an all-ATM backbone. Cyberspace is crowded with construction cranes, and many analysts believe that the rush of investment has only begun. (AT&T has yet to place its bets, for example.)

Of course, no one can be certain these efforts will be enough. If a million people were to decide to go Web-surfing simultaneously at an average data rate of only 14.4Kbps, their activity would amount to 14.4Gbps of load, which is not five or 10 times, but on the order of 30 times greater than the aggregate backbone traffic carried in the fall of 1994. If they were surfing at 28.8, the number would be twice that. Either this year or next, ISDN—which runs at 56Kbps and 112Kbps, will surely start to spread, pushing loads still higher.

Even if the Internet survives 1995, each year thereafter will bring a new mountain to be climbed. Animation, audio and teleconferencing all loom on the horizon. At some point in the price curve, phone traffic (and perhaps, eventually, radio, TV and movies) will start to migrate onto the Net. And there are mountains rising behind even those. There is a gentleman walking around my town with a couple of small videocams attached to his hat. Any friends of his who want to know where Steve is at a given moment and what he is doing can just surf to his page and see for themselves. Some people think his helmet is an outrageous invasion of privacy; others think it's the ultimate personal security device, and that it will sell millions. **CIO**

*Fred Hapgood (fhapgood@channel1.com) is a science and technology writer based in Boston.*

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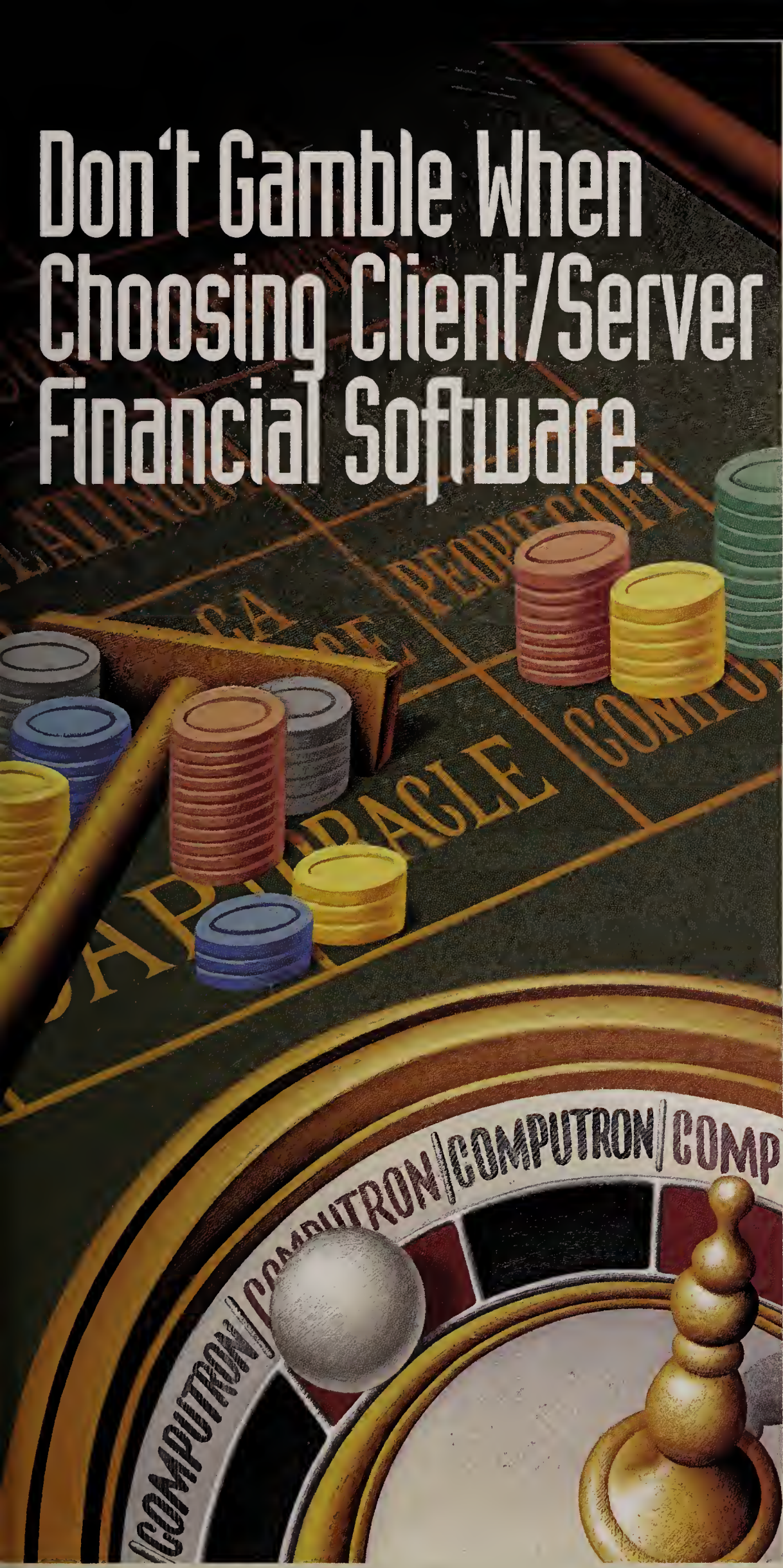
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# The Economics *of* EDI

Everyone raves about the benefits of electronic data interchange, but is anybody really counting?

BY TRACY MAYOR

**E**LECTRONIC DATA INTERCHANGE has long been viewed as one of the enabling technologies that will help companies tame the “paper tiger” and reach new heights of productivity. And indeed, enthusiasm among the growing number of users of the technology—now in its third decade—runs high. But when it comes time to ask for the often significant amounts of cash needed to launch a system or upgrade an existing one, EDI can present problems.



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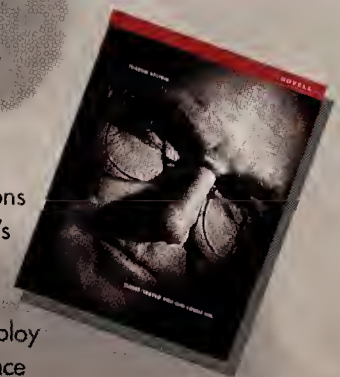
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The basic idea behind EDI, which allows business partners to exchange documents such as invoices, purchase orders and shipping notices via an electronic network, is to speed up everyday transactions and eliminate some of the reams of paper most companies must currently deal with. But some of EDI's most significant benefits—productivity, efficiency, accuracy—are difficult to quantify or forecast. For one thing, unlike other, internal technology improvements, the success of EDI depends on outside forces—namely, the trading partners with which a company wants to do business electronically. Not only that, but many companies already using the technology were pushed into it by larger trading partners and so skipped a thorough cost analysis; as a result, it's often difficult to use their experiences as a benchmark. In short, it can be tough to predict with any certainty when—or if—an EDI system will return its investment.

Cost-justifying EDI can be a "vague process," admits Doug Hanson, program manager for Scientific Engineering Workstation Procurement (SEWP) at NASA's Goddard Space Flight Center in Greenbelt, Md. "The savings are there, but it's difficult to determine what those savings are."

The Goddard Center recently began exploring EDI in accord with a presidential edict requiring federal agencies to be EDI-compliant by 1997. That edict, and the increasing pressure brought to bear by large EDI adopters on their smaller trading partners, is spurring a second wave of companies to begin looking seriously at electronic data interchange. Many of them, particularly smaller players, are worried about the costs of EDI startup and communications (often handled by a commercial value-added network, or VAN) and the ongoing difficulty and expense of setting up with additional trading partners.

To those potential new users, EDI managers and IT professionals overwhelmingly send the message that EDI does generate savings, oftentimes dramatic savings, even if they're not the type that can be easily anticipated at the start of a project. NASA's Goddard Center, for example, which manages the contracts for many of NASA's Unix workstations, has invested what Hanson says is a manageable amount and expects to realize rapid payback from its ongoing EDI pilot. "Between one year and two, we'll start getting our money back out of the system," he says.

Similarly, Hastings Books, Music, and Video Inc. expects its new EDI system, which is

based on FourGen Software Inc.'s financial and supply-chain management programs, to pay for itself within 13 months of going online—if not before. "The rollout was Nov. 14, 1994," says Mike Woods, vice president of information systems for the Amarillo, Texas-based retail chain, "and the system will pay for itself by the end of the year. We're happy with that."

With a little perseverance, EDI practitioners say, managers can "drill down" on these kinds of numbers to determine which areas are likely to generate savings for their own companies.

### Sources of Savings

**A**nalysts estimate that some 75 percent of an average business transaction is reentered from another computer, explains Gary Gagliardi, president of Seattle-based FourGen. When optimally deployed, EDI—which in essence allows data to stay digital rather than having to be printed, typed, faxed, photocopied, mailed or otherwise transformed—can eliminate 60 or 70 percent of that reentering, he says. In dollar amounts, companies that might have previously been spending \$65 to \$85 per business order—that is, for each completed business deal, which encompasses multiple transactions and document exchanges—can now spend as little as \$4, Gagliardi explains.

The number-one reason is reduced processing time. For example, by exchanging purchase orders electronically with Government Technology Services Inc. (GTSI), a major government reseller, the Goddard Space Flight Center shaved several days off its GTSI procurement cycle. Hastings' new EDI system is expected to reduce the time it takes suppliers to deliver goods to Hastings stores from three weeks to one week. And Ted Wilkinson, staff systems manager at Health Net of Woodland Hills, Calif., the state's second-largest health-maintenance organization, says his firm has eliminated several person-days per month from its invoicing process, which is in a pilot EDI project using Digital Equipment Corp.'s Alpha computers.

Where exactly do such savings come from? Personnel costs are one big factor, as data-entry employees, if still required at all, can be used in dramatically reduced numbers. Hastings Books, Music, and Video, which had plans to implement EDI when it was incorporated in 1991 and is now in the process of upgrading and expanding the system, figured out how many people it would need if it didn't use EDI at the outset.

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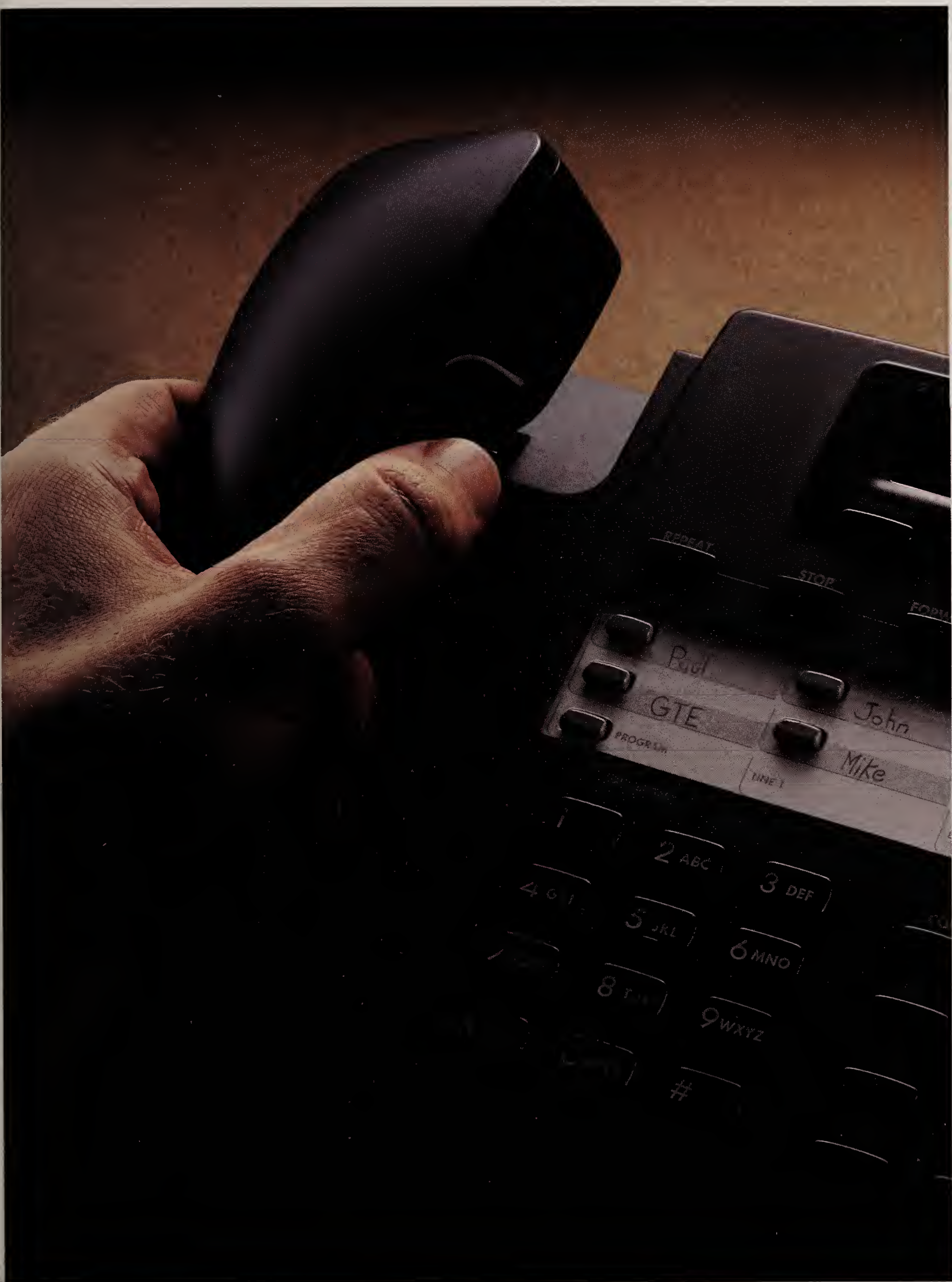
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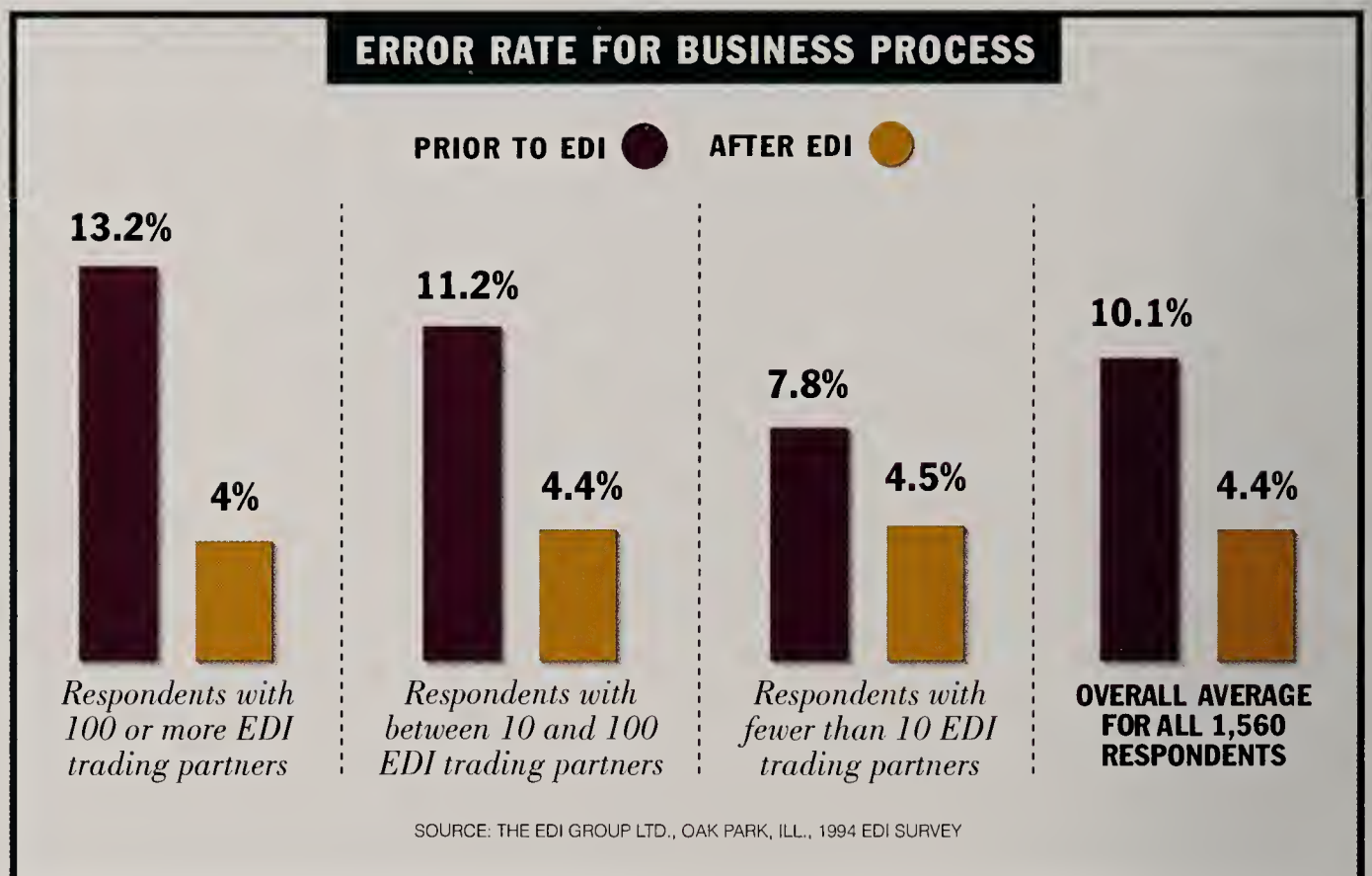
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**“We** get better accuracy but also better detail because we can include more detail in the invoice. It increases the amount of available information.”

—Ted Wilkinson



“The number of people [required] in accounting, purchasing, product sites and clerical would have far outweighed development and implementation costs within IS,” says Woods. In fact, “any one of those departments would have outweighed the costs [of] EDI.”

Getting rid of the paper process—the printing, stuffing envelopes and mailing—was a significant cost-saver for Avex Electronics Inc., says Mike Gordon, manager of the Electronic Commerce Group for the multinational contract manufacturer. Gordon estimates the Huntsville, Ala., company saved half a million dollars in 1994 and more than a quarter of a million in 1993 thanks to EDI.

Error reduction can also significantly contribute to the bottom line, says Sigrid Marmann, president of Datatech EDI Systems, a San Rafael, Calif., developer of financial EDI applications. Depending on the thoroughness of a company’s quality-assurance program before EDI is introduced—and on the firm’s volume, since larger numbers of transactions tend to yield higher error rates—corporations can expect to see between a 10 and 40 percent improvement in accuracy, which, in turn, ups the intangible but often crucial customer-service factor.

Beyond such quantifiable changes are a raft of second-tier improvements that managers may overlook when trying to forecast the effect of EDI. High on managers’ lists are reduced inventory, faster collection of receivables and improved productivity. Personnel once stuck with error-correction or data-entry

tasks can be reassigned to more value-adding positions, and job-enhancing equipment, such as new computers, can be received and deployed more quickly thanks to shortened procurement cycles.

Marmann reports that her clients have successfully renegotiated payment terms with some of their business partners for more favorable terms. And Health Net’s Wilkinson is one of many managers who plans to exploit electronic data for market analysis and other kinds of corporate research. “We get better accuracy but also better detail because we can include more detail in the invoice,” he says. “It increases the amount of available information.”

Business consolidation is another longer-term benefit of EDI, as companies winnow their vendors and suppliers down to the key, EDI-enabled players. Digital has reduced from 1,300 to 250 the number of transportation partners it deals with while automating 75 percent of the freight invoices it handles, according to Wayne Toye, worldwide EDI marketing manager for the company in Stow, Mass.

### Strategies for Success

**A**rmed with such specific targets, managers may be that much more likely to get the green light to implement EDI, but how can a company assure it will reach these goals? Managers and vendors point to several golden rules for achieving a fast, reliable return on investment.

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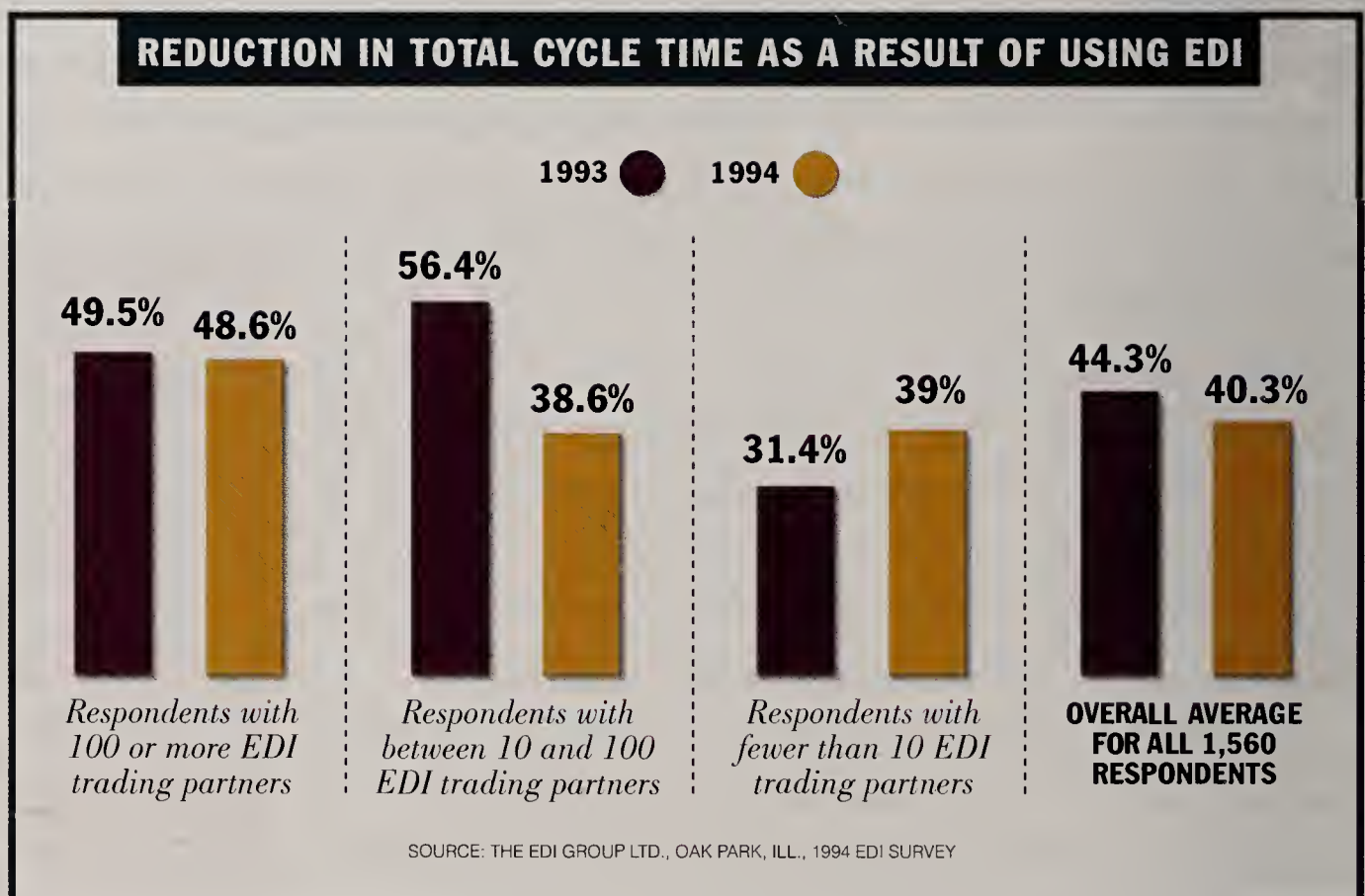
**Buy for growth.** Following the age-old adage that you have to spend money to make money, vendors and users alike advise that companies invest upfront in a system that's able to automate a substantial chunk of their business and that will be up to future expansion, both from a standards and a volume point of view.

Faced with an edict from a larger trading partner, small firms may be tempted to purchase only the EDI translation software that allows them to receive purchase orders electronically or to set up the system to conform only to that one company's proprietary transmission requirements. But if that order is simply printed out and routed inside the company as it always was, the cost benefits, if any, will be minimal, says Marmann. And

which recently began marketing Templar, software that lets companies exchange secure documents over the Internet. "The easiest way to save money is to amortize cost over a huge base," he explains.

In implementing its second phase of EDI, Hastings Books is "focusing on the top 15 percent of our vendors," says Woods, which will represent 85 percent of the company's product procurements. As a primary goal, Woods says, the firm hopes to have its top five vendors using five standard EDI document types by year's end.

**Exploit EDI internally.** Once a system is in place, observers say, it's in a company's best interest to use it to its full potential. To fully realize the benefits of automated business transactions, many companies find



as trading partners move away from customized systems and over to the X.12 transmission standard, businesses should ensure that they'll be able to keep pace by buying a standards-based system themselves.

**Target the top.** Most managers agree that the best way for companies to reap the highest benefit from EDI is to identify those partners with which they do the highest volume of business, and begin trading electronically with as many of them as possible. The more trading partners you can bring online, the quicker it will be to make money back on a system, says Lew Jenkins, chairman of Premenos Corp. in Concord, Calif.,

themselves scrapping either part or all of their existing shipping, purchasing and accounts-receivable systems. If this sounds like business-process reengineering, it is. "EDI is an enabler," Toye says. "Many times when [customers] look at broadening the system, [reengineering] and EDI go hand in hand."

**Reduce transmission costs.** Once a system is up and running, communications costs can take a big chunk out of whatever savings EDI is generating. Many firms exchange EDI documents either over a dedicated telephone line or through a third-party VAN. According to the EDI Group Ltd.,



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**"Many times when customers look at broadening the system, reengineering and EDI go hand in hand."**

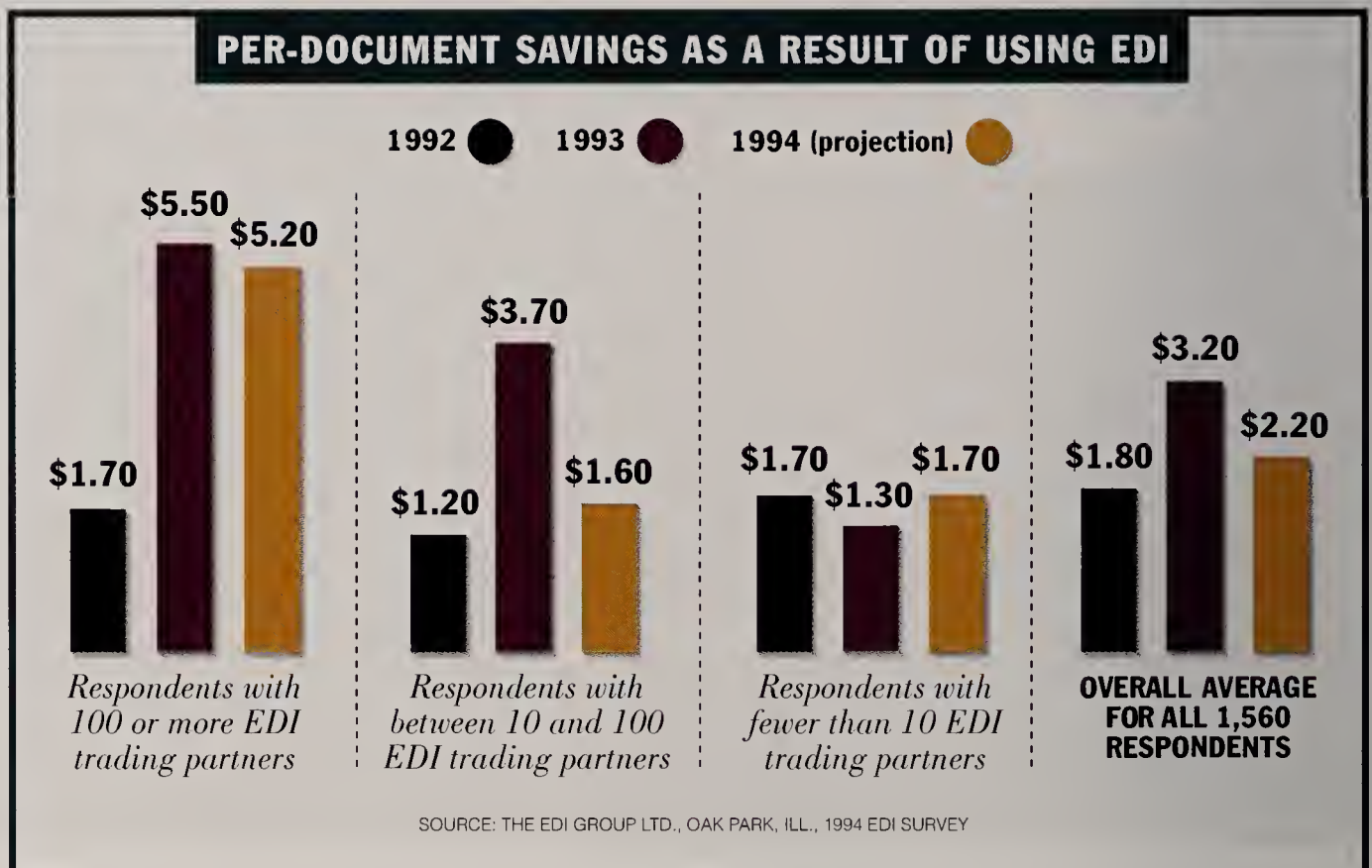
—Wayne Toye

an Oak Park, Ill., consultancy that surveyed 1,560 EDI sites last year, the cost of maintaining a third-party network was second only to initial startup costs in overall EDI-related expenditures, taking up an average of 10.7 percent of a company's EDI budget.

But a third option has recently emerged. Premenos markets an EDI system that runs over the Internet. The problem with the Internet has been its lack of security when handling important documents, such as purchase orders. Premenos' Templar software features a built-in encryption system developed by

surprisingly, vendors of midrange systems—attack the PC as underpowered and undesirable for true EDI, the jury is still out on the question.

One aspect is clear, however: PC-based EDI systems are significantly less costly to implement than their higher-horsepowered cousins. Datatech EDI develops EDI bridge software that sells for \$2,300 and works exclusively with Computer Associates International Inc.'s PC-based AccPac Plus Accounting system. Marmann estimates that an AccPac Plus user can implement EDI purchase orders and acknowl-



RSA Data Security Inc. to ensure that transmission integrity is not violated across the Internet or other TCP/IP networks.

The savings can be substantial, Templar testers say. "We already had an Internet connection, and it's a flat fee for everything we send," says Avex's Gordon, explaining why the firm is trying out Templar. "The VAN is \$3,000 a month, and they charge by the character. Our goal is to get rid of the VAN."

As more companies explore cheaper, direct-connect options, value-added network service providers will likely respond to the challenge with lower rates, improved services or both, observers say. For customers, the overall result should be more-manageable transmission costs coming sometime soon.

**Don't rule out a PC-based system.** The PC is still an area of considerable debate in EDI circles. While several vendors—not

edgments using Datatech software for less than \$5,000—"and that includes personnel."

Digital's Toye and Premenos' Jenkins are among the executives who dispute that view—Jenkins characterizes most PC-based EDI as of the "rip and read" variety, in which electronic transmissions are printed out for use within the company, while Toye says PCs can't handle some standards or more than a couple of partners. But Marmann is firm in her conviction. "Everybody's talking about bringing EDI down to a PC network. You can get a Novell network in gigabytes, and look at the 486 or [Pentium] chips—you're talking about power," she argues. "For medium-sized companies, \$20 [million] to \$80 million, PCs are appropriate." **CIO**

Tracy Mayor is a freelance writer and editor based in Beverly, Mass.



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# A Long Reach

New network-simulation tools are providing IS managers with the ability to model and administer their enterprise networks with live data from a central site

BY PETER CASSIDY

**T**he desire to base the design and administration of computer systems on a sound knowledge of their performance is as old as the terminal. Yet in distributed environments, the personnel resources needed to do that can be prohibitively expensive. In the quest for centralized control, large IS shops are investing in network-management tools and services, among them sophisticated modeling and simulation tools that make direct-line models of networks from data collected by network-monitoring agents.

"I see more 'lights-out' centralized control," says Tim Sloane, director of messaging applications and research at the Aberdeen Group Inc., in Boston. "What you're going to have is one operator console located in one facility that runs everything."

According to a 1994 Business Research Group (BRG) survey of 1,500 large U.S. companies, the proportion of IS budgets devoted to network-management tools and services rose from 4.8 percent to about 9.2 percent

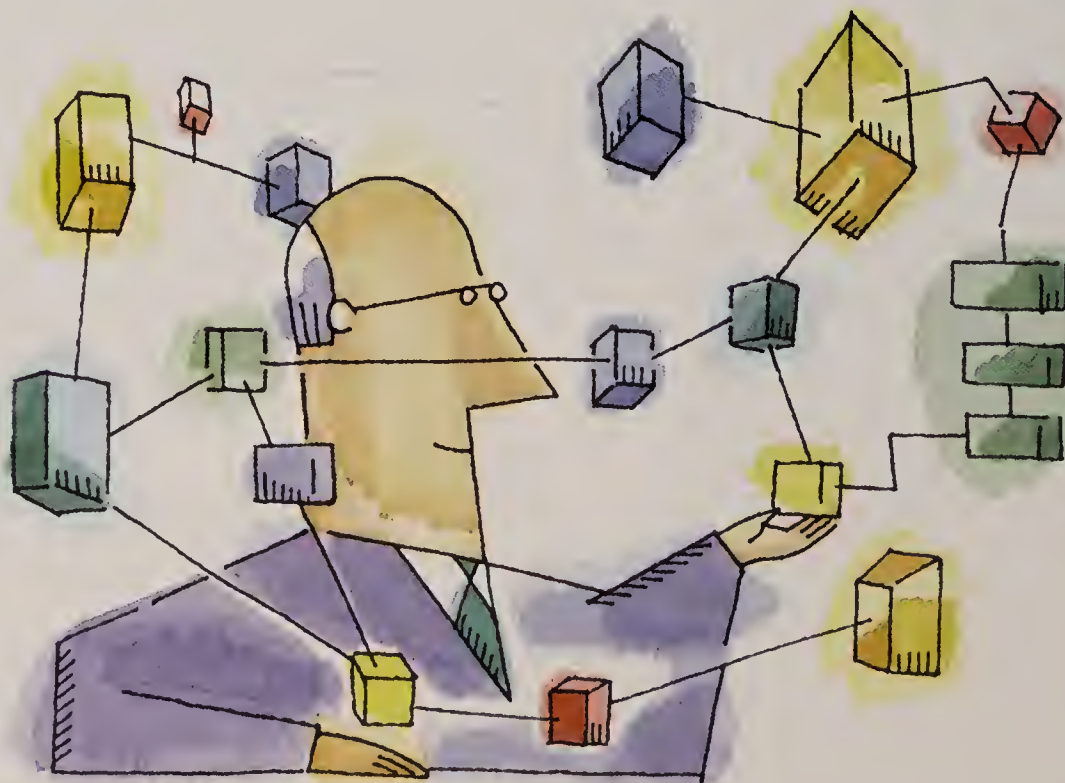
between 1993 and 1995. The new tools are making it possible to move back to a familiar paradigm of network management: that of centralized host-based computing systems, but in a distributed environment.

In the beginning, mainframe managers had capacity-planning tools to forecast and maintain service levels through changes in applications and usage loads. And it was good.

Then there were LANs. Maddeningly opaque and unruly, they could only be controlled by deploying armies of LAN managers to tame them. This commitment of skilled personnel, however, was tolerated only for as long as it took network-monitoring and -modeling products to arrive.

The first network-simulation tools were based on mathematical representations of network elements. These enabled managers to build a generic representation of their networks—an important advance over running a network by intuition and playing telephone tag with local LAN administrators. With tools such as the C/S Composer by Scientific and Engineering Software (SES) Inc. of Austin, Texas, and BONEs Designer, now owned by the Alta Group of Cadence Design Systems Inc. in Foster City, Calif., managers can construct working models of their enterprise networks from device libraries—representations of network elements—and understand what parts might need attention.

As helpful as these tools may be, they still only provide mathematical constructs—not real-life views of the chaotic substance of today's networks. To get a true-to-life picture of what is happening on a network requires live data from the field. So along came monitoring agents such as Hewlett-Packard's NetMetrix Power Agent and Network General's





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SniffMaster for X sniffer systems, which monitor and report back on the performance of network segments.

These network monitors provide managers with some insight into how much capacity is being claimed at each network segment, restoring some small part of the intelligence previously provided by local LAN wizards. With this data, the central network manager can begin to predict the response of his network to new applications or configurations.

**T**aking the simulation concept one step further, outfits like Make Systems Inc. of Mountain View, Calif., with its NetMaker XA Interpreter software, and Optimal Networks Corp. (also of Mountain View), with its Optimal Performance network-simulation software, are incorporating this network-monitoring data into simulations permitting managers to create models that are more exactly representative of their own networks. The advance is significant in that simulations may be made of the network based on workaday performance. That's important for assessment of current performance, and it enables managers to evaluate the impact network modifications will have on overall performance. Variables such as models of network elements or applications may be introduced to give the manager a more detailed assessment of that element's repercussion on his network.

Optimal Networks loaned a "first-look" version of its new enterprise-network modeling tool to Matt Osman, a systems specialist at Occidental Petroleum Corp. Optimal Performance generates network simulations derived by animating the data from Network General's network-monitoring systems. Osman threw his biggest problem at the software: slow response times on the four token ring networks that serve some 300 users in Occidental's Los Angeles accounting department.

Using the simulation tool, he was able to track down the response lag to the application level. The accounting software was sending data back to the clients in great numbers of very

**With data obtained from monitoring agents, the central network manager can begin to predict the response of his network to new applications or configurations.**

small packets, creating delays in delivery of requested data that wouldn't occur with larger packets. Culprit apprehended.

Simulation tools at this stage of sophistication carry considerable price tags. Monitoring agents, which cost from \$2,500 to \$5,000 for each LAN segment, can quickly add up. Advanced modeling software also carries a big ticket. Of Optimal's \$25,000-plus product, Osman says,

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#### **NetMaker XA**

Make Systems Inc.  
*Mountain View, Calif.*

#### **NPAT**

Wandel & Goltermann Inc.  
*Research Triangle Park, N.C.*

#### **Optimal Performance**

Optimal Networks Inc.  
*Mountain View, Calif.*

#### **OPNET Modeler**

Mil 3 Inc.  
*Washington*

*SOURCE: Strategic Networks Consulting Inc.*

"I couldn't see the justification to pay for it. Our network is not so very bad to need something desperate like that.... I could just hire them to come in as consultants."

Many companies will gladly pay the price for such informed analysis, however. John Morency, director of network management services at Strategic Networks Consulting Inc. in Rockland, Mass., says that the price-point threshold for these tools depends on reoccurring network costs. For a large company with an extensive WAN, monthly tariffed data-transport costs (dial-up, frame relay and leased lines) can run from \$25,000 to \$50,000 a month. A reduction of 5 to 10 percent, achieved through live-data analysis and network optimization, would quickly offset the cost, Morency points out.

Once bottlenecks and efficiencies are identified, simulation tools continue to be useful in predicting the effect of new applications on network performance. Managers can work with different scenarios before they make costly mistakes. For example, by modeling the stresses new applications would place on a network, a manager can make the necessary hardware and software adjustments to carry them.

At this stage of utilization, simulation tools enable real proactive management: the Zen of network administration, still practiced by too few. In its survey of network managers, Strategic Networks found that two-thirds of those interviewed "did not do performance base-lining," according to Morency. "Microsoft, Kodak, Liberty Mutual did have top-down plans and saw the growth of their networks over a three-year life cycle," Morency says. But this method consumes expensive time that smaller IS shops may not be able to afford—especially because it is useful only if it produces a "living document" that is constantly revisited over the course of the life cycle. **CIO**

*Peter Cassidy writes from Boston on national affairs, business and technology. He can be reached via e-mail: pcassidy@delphi.com.*

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# How I Got Fired

**W**HEN I GOT FIRED, I didn't actually get fired. I reached a "mutual understanding concerning the termination of my employment." I'm sure of this because it was all spelled out in the letter my new boss handed me. The part I had trouble with was not being able to remember any mutual understanding, any conversation directed toward achieving a mutual understanding or anything about terminating my employment.

Apparently, I wasn't paying attention.

I didn't miss the boat entirely, though. I knew there was some awkwardness in the transition from the former chairman (let's call him the Chairman), a seasoned and visionary executive, to the young, eager and ambitious son (let's call him Junior) of the company's family ownership. The former chairman had been my boss right up until a few months before I reached this mutual understanding that I was having trouble recalling. I had liked him and thought that it made sense to do the things he wanted me to do. He was, after all, the Chairman—despite rumors that he was only keeping the seat warm until the family scion was ready.

In retrospect, my history with the Chairman may not have been such an advantageous item on the old resume—at least not from Junior's perspective. Before the Chairman and I hooked up, he had for years tried to implement his business vision without much satisfaction. He had many very good ideas but didn't know exactly how to make them happen. (In the case of some of his ideas, the industry climate and the technology support weren't quite there yet. Even so, the book on the Chairman was that his vision stopped a few years short of today.)

It was my good fortune, however, both to understand what the Chairman wanted to do and to have some ideas of my own how to get it done. Accidents of timing



*The facts themselves  
may be clear in  
one's mind. But the  
old hard drive still  
strains to recall  
certain vaporous  
data streams....*

BY W. F. DYLE

had brought technology to a point of lower cost and higher function to make some formerly far-fetched ideas feasible. So the Chairman and I had a pretty sweet deal. I was having a ball; he was telling people he could finally see some of his vision coming to pass, and he was energized.

I kind of wish he had kept quiet about some of this last part—since implementing a vision turns out to be conduct unbecoming of someone whose role is to keep the seat warm for someone else.

**J**UNIOR WAS NOT KNOWN for his vision. He was a day-by-day, quarter-by-quarter kind of guy, and he had an aversion to technology. This was not good. He also spoke in tongues. Well, he might just as well have spoken in tongues since nobody—not just me—could ever figure out what he was trying to say. The Chairman maintained it was best not to pay much attention to Junior's actual words; instead, you had to see if you could pull a semi-solid notion out of the whole paragraphs.

It was our corporate practice for executives to hold regular one-on-one meetings with each other. I'd meet with the Chairman, the chief financial guy, the chief administrative guy and Junior. Two or three months before I reached that mutual understanding I can't remember reaching, I had back-to-back one-on-ones with the Chairman and with Junior. These were always a little weird and schizophrenic; first the Chairman would agree to something and then Junior would say he'd kill me if I did it. Then he would proceed to regale me with intimate confidences, such as that the Chairman had to be managed or else he would keep screwing up the business.

Politics at such altitudes is strange, but you have to believe that the guy whose name is on the building probably has more influence than the guy who, for the

moment, happens to have the org chart in his favor.

Anyhow, this particular pair of one-on-ones was trouble. It seems the Chairman, just before leaving town on a business trip, had run into Junior's office all excited, saying how he felt like he was 18 again. Now, put yourself in Junior's place. You've been waiting and waiting for your chance, spending as much as a whole year in various key positions throughout the company, learning the old ropes and claiming merit promotions that, deep in your heart, you knew you hadn't really earned. And Dad had finally said you could run the business; in fact, you were just named president! But now the guy who's hanging on to your seat (and who treats you like a kid sometimes) has just bounded into your office as a born-again 18-year-old with visions that are coming true!

**Asking questions was suddenly out.**

**Which was kind of a problem since I**

**was supposed to be overseeing a**

**lot of operations for the business**

**and also changing things.**

It would be hard to be thrilled with this scenario. And if you could find the guy who was feeding these crazy ideas to the Chairman, well, you'd shoot him.

It was me. And he did.

IT'S A LITTLE UNFAIR to suggest that the *only* reason I went away was that I got the Chairman all excited about doing the things he had always wanted to do. I also asked too many questions.

I remember one of my first business-unit review meetings with Junior. I was under the mistaken impression that all of us present at the meeting—such eminences as the CFO, the senior administrative exec, the operations exec and me—were there to figure out exactly what we were being told so that we could

effectively support the unit and plug the holes. When I was pointedly told by Junior that I was there to listen and that he would ask the questions, I should have known that something was up. The Chairman was more tolerant of questions and open discussion, but the Chairman was also this old guy trying to feel 18 again—what did he know?

So, asking questions was suddenly out. Which was kind of a problem since I was supposed to be overseeing

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a lot of operations for the business and also changing things.

When the business consolidated two other units and one of Junior's personal favorite proteges was popped loose, my unit got moved from the Chairman's purview and folded into this new guy's unit—which had a really neat name but didn't actually do anything. Well, it did do one thing: It made sure my unit stopped work on advancing the vision of the Chairman, who was quickly being eclipsed.

None of this was any fun; it was also pretty embarrassing. When I spoke to the Chairman about the change, there was little he could say: It was Junior's call. He reminded me that he had made sure I was enrolled in the special, super-duper executive severance program in case things didn't work out. He had also arranged

**Between kindergarten and retirement, you don't get many big blocks of discretionary time—unless you're on the street for a while. So, if you get your chance, do something with it.**

a nice raise and had me sent to the company's top management school.

So, there I sat with the new guy's new guy—now my boss—and he was telling me how the business wanted to change direction and how, for some reason, it wanted to do so without me. There was no point in discussing it. After all, the letter started with the admonition that it confirmed the aforementioned mutual understanding about termination of my employment. While I had no specific recol-

lection of the alleged understanding, I figured why embarrass myself any further by appearing to be forgetful. I just wished I could remember.

**T**HEY WERE CIVILIZED about my demise. When senior managers are let go, it is a hell of a lot more reasonable than when people who make a lot less and probably work harder are. I got a good package. Many people aren't so lucky. I was doubly lucky in that this was only my second time on the street in just over 30 years of working. (The first time, it was my idea, and I was incredibly ignorant about changing jobs and finding new work. I'm smarter now about how hard it can be to land on your feet.) In my case, the difficulty was compounded by advancing years and the involuntary outcome of this last assignment. Nevertheless, I still

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couldn't get over the novelty of suddenly having time to do things that many people never get a chance to do. Between kindergarten and retirement, you don't get many big blocks of discretionary time—unless you're on the street for a while. You don't know the difference before kindergarten, and, these days, who knows when retirement will be? So, if you get your chance, do something with it.

I'VE TRIED THE SITTING-by-the-phone bit, and the networking bit and all the other rushing around you're supposed to do when you lose your job. It got boring real quick. And don't believe other people's war stories about how the phone rang off the hook with one tempting offer after another. It doesn't—no matter how good you are. Oh, some

**Don't believe other people's war stories about how the phone rang off the hook with one tempting offer after another. It doesn't—no matter how good you are.**

get lucky, I'm sure. But in our jobs, we are at the top of the professional pyramid and command too much salary for the jobs to be very plentiful. Nobody has to remind me that the pyramid's peak is getting more precarious as what we know and do undergoes fundamental change while our hair gets grayer.

While I can't say I didn't worry, and can't deny checking my answering machine frequently and sending out the requisite number of resumes to

the recruiters and CEOs, I still took the time to do stuff. I volunteered as a crew member on a sloop used for environmental education; I took a long train ride around the country; I was in France to watch 70- and 80-year-old guys parachute onto a field where they had fought 50 years before. These were things I will never regret doing, even if maybe they did delay my landing. I think I now have a better perspective.

But it's funny how I can remember some things better than others, and certain things not at all. That mutual understanding, for example. But they say the memory is the first thing to go. **CIO**

*W.F. Dyle is the pseudonym of an active former CIO with a largely unimpaired memory.*

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A FINANCIAL WORLD SUPPLEMENT TO CIO MAGAZINE

# Information Technology and the Bottom Line



# Soft Sell

Creating software brand value in a rapidly expanding, and changing, market.

BY JUDY WARD

COMPUTER SOFTWARE IS JUST NOW MAKING THE TRANSITION FROM niche market to mass market. The changed message of software advertising says it all.

In the past, software advertising sounded like the headline of this 1980 ad from Oregon Software: "To the users of OMSI Pascal-1 for the PDP-11."

Contrast that with how Intuit leads off a current ad for Quicken, its personal-finance software. "Now we manage our finances without a fight," reads the headline, alongside a picture of a married couple.

"Our product, in a more logical sense, helps you get organized, shows you reports and graphs, and keeps everything

straight," says Scott Cook, Intuit's founder and chairman. "Now, the product doesn't have anything to do with spouses, but it can be used that way. It's a benefit that's much more emotive, but much more important to some people."

Software advertising, in other words, is aiming less to dazzle with technical merits these days than to demonstrate the products' usefulness.

"From a brand perspective, on both a corporate and a personal level, people want to make a fairly safe buy," says Peter Horan, president of the marketing services division of International Data Group (IDG), a technology-publishing company (and publisher of *CIO*) and market researcher

headquartered in Boston. "They don't want to buy the Betamax VCR and spend the rest of their lives regretting it. At this point, success begets success."

Take a look at our first-ever evaluation of software brand values, which starts on page S6. At \$10.3 billion, Microsoft's brand name is worth more than the other 18 companies evaluated combined.

Why? Because software has become more of a mass-marketing game, and Microsoft is software's most aggressive pursuer of the mass market. "If you were a student of many industries, you could probably predict this moment, when awareness of products and categories of products is pretty high, but points of differentiation between those products are declining," says Liz King, director of corporate marketing at Microsoft. "So the value of the brand name becomes the next territory for marketing."

At the same time, computer professionals remain more interested in the nuts and bolts than the brand, King says. Corporate technology managers have gotten much shrewder about software's value to them, for example. "People are saying, 'Wait a minute. I'm paying \$300 for this software, and really it's only worth \$100 to me in the long run, so how can I get this software for \$100?'" says Christopher Germann, senior research analyst at the Gartner Group, a technology research and consulting company.

Interestingly, it's better technology on both the hardware and software ends that's making computers appeal to a mass market as well. But unlike computer professionals, what lures nontechie buyers is not a faster chip or brilliantly innovative software code. It's the end result, what new and exciting things the software can do on their computer screens.

So while computer magazines remain filled with ads aimed at corporate pros, software makers trying to attract corporate business have broadened their marketing scope to include top management. "Part of the marketing has shifted away from the techie and the [information systems] shop and literally into the corporate boardroom," says Michael Erbschloe, president of American Business Network, a San Diego-based technology-consulting company. "The ads are moving more toward functionality and the power of the software and what you get from it, as opposed to how technically slick it is."

"People don't want to buy 'technology,'" says Jeffrey Howard, worldwide OS/2 brand manager at IBM. "They want

to buy something they can use and that's going to do what they need it to do."

Intuit's Cook, a former brand manager for Procter & Gamble's Crisco, is often cited as a pioneer in applying consumer-products techniques to software marketing. Take the case of Quicken. "With personal finance, a lot of people feel emotionally

uncomfortable because they lack the confidence that they're doing it right," Cook says. "If you just hit them with a kind of paternal sale of, 'You should do this, it's good for you,' there'll be a group of people you attract, but then there will be another group of people who are in avoidance about it."

Critical, then, is "understanding what the benefits of the product are and talking on the level of the benefit, even if it's a more emotive benefit." So one ad depicting a man and his daughter is headlined, "I used to think everyone woke up at 2 A.M. worrying about money."

For older product categories like word processors and spreadsheets, it's much tougher to wow buyers at this point. Partly for that reason, price becomes a bigger factor. Says Germann: "The margins are so low that [software makers] have to start dealing in huge volumes to make money on them."

As sales of some applications programs struggle, momentum shifts to other kinds of software. "At the enterprise level [for corporate-wide software], the workgroup level and in the home, you've seen really dramatic innovations on the software front," IDG's Horan says.

Some software companies, such as Oracle, which makes applications software that helps corporations' far-flung computer networks mesh data, are clearly creating valuable brand names. While Oracle isn't exactly a household name, its product

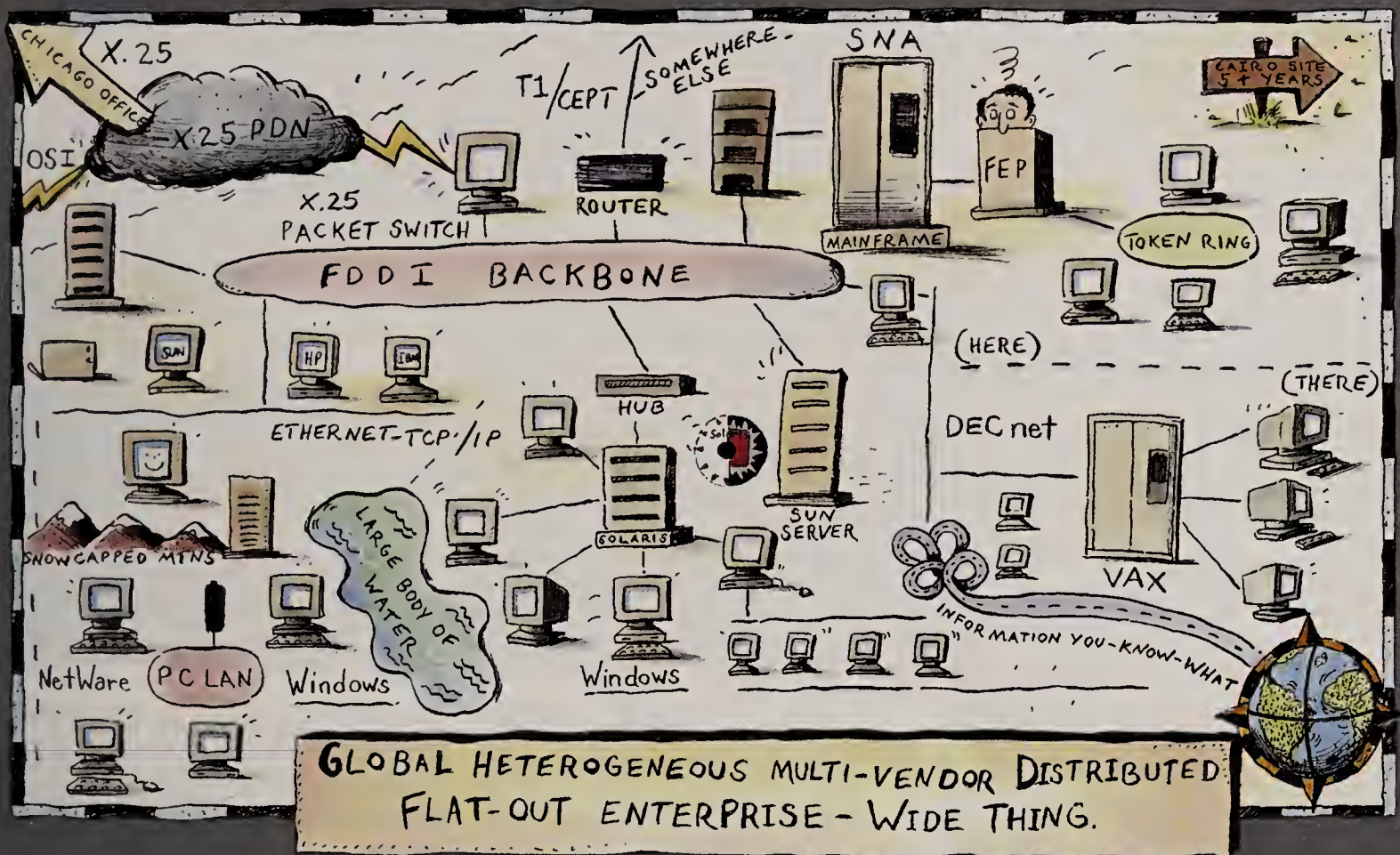
strategy has translated into a brand value of \$931 million, far surpassing better-known software makers such as Novell and Lotus.

Other software companies are trying to shift their focus to hot areas. No company illustrates that better than Lotus, which saw its brand value decline 57% in the past year due to waning sales of more mature products like spreadsheets. Lotus hopes to transform itself into a network-communications-software company centered on the workgroup (or "groupware") product called Notes (see page S11), which helps people working on computers in different locations communicate (FW, Nov. 8).

Meanwhile Microsoft's power keeps growing. An IDG study



**"From a brand perspective, on both a corporate and a personal level, people want to make a fairly safe buy. They don't want to buy the Betamax VCR and spend the rest of their lives regretting it. At this point, success begets success."**



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of computer brand names released in December found survey respondents citing Microsoft as tops in meeting both business and home needs—not surprising given the company's longtime business success, but intriguing since only recently has it begun seriously pursuing the home market.

One major reason for Microsoft's brand power is its staff's relentlessness. "Success has never gone to their heads," Horan says. "When you are meeting with Microsoft people, their mentality is that they are one paycheck away from homelessness. They may have \$20 million in stock options, but it's like they wake up in the morning and worry about little competitors that are just inconsequential. They are obsessive: 'What are they doing? How can they beat us? What can we do to be better?' Complacency has never crept into the company."

That drive has brought Microsoft and its chairman, Bill Gates, lots of attention. "Microsoft is probably the most extroverted software company in the world—high profile all the way around," Erbschloe says. "Whether you like Bill Gates's business scruples or not is separate from the fact that Bill Gates is always on the scene, opening his mouth. He is literally the leader of Microsoft."

Public awareness translates into brand power. "Consumers know Microsoft's ads are on TV. They've probably heard somewhere else that Bill Gates is the richest man in America," Horan says. "And they say, 'Hmm, Microsoft is really successful.' Then they go in the store, and they see a Microsoft box and a

**"When you are meeting with Microsoft people, their mentality is that they are one paycheck away from homelessness. It's like they wake up in the morning and worry about little competitors that are just inconsequential."**

Borland box, and they know Microsoft and they've never heard of Borland."

Nowhere is Microsoft's dominance felt more than in the market for operating-systems software to run PCs. Later this year, Microsoft plans to introduce Windows 95, the redesign of its wildly successful Windows operating system.

Windows' overwhelming PC market share leaves brands like OS/2 Warp from IBM—a huge player in the market for large-enterprise hardware and software—struggling to play catch-up. Horan offers a simple explanation for OS/2's relatively scant market share. "It's never had momentum," he says. "People have decided, particularly on the desktop, that Windows is the standard, and they don't see a compelling reason to change over."

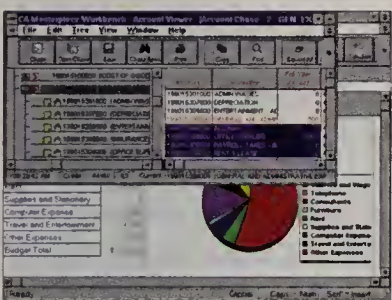
Barring a move by the federal government or the courts to break up Microsoft, many think the software juggernaut will continue indefinitely.

Yet IBM's history argues to the contrary. "IBM's dominance in the computer industry for 30 years, from the late 1950s to the late 1980s, was far more complete than Microsoft's," Horan says. "And yet it fell apart. I mean, IBM still does well in certain areas, but it doesn't have the same level of mastery of the industry it had 10 or 15 years ago."

Microsoft's future brand power may ultimately depend less on technology than on the continuation of its chairman's drive to be No. 1. "I have no idea what it's like to be Bill Gates, and there are very few people who have that vantage point," says Richard Tedlow, a business historian and professor at the Harvard University Graduate School of Business Administration. "But I think the temptation to believe your own press notices must be overwhelming. And then to look at the size of your company, its success, to look at the fact that it was a giant-slayer, to look at your record of shrewdness—and then to think that these accomplishments render you invulnerable." ■



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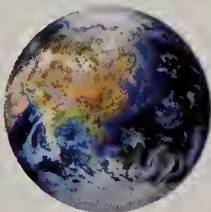
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*Software superior by design.*

# Software Brands: More like shampoo than tobacco

For all the supposed glamour of computer technology, consumers give software brand names about as much respect as they do different types of shampoo. True, the Microsoft name is valued at \$10.3 billion, over two times the combined sales of all its software products (for more on Microsoft's dominance, see page 49). But the remaining 18 software brands included in our table are valued at discounts to their sales.

Why? Stiff competition and hefty expenditures for R&D and marketing often result in thin operating margins for newly acquired or developed products. Also, the uncertainty caused by rapidly changing technology leads appraisers to value software brands at low multiples of the profits those brands generate.

For example, the brands in our table, excluding Microsoft, posted an operating margin of 14.8% and a mean strength multiple of 5.9 as calculated by the U.K.'s Interbrand Group, the world's premier brand-valuation firm. With the exception of Microsoft, producing software is about as profitable as making a brand-name shampoo, where the average margin is 13.6%.

Now look at tobacco, where the top branded goods are valued at steep premiums to their sales, thanks to fat margins and high barriers to entry. Here the typical margin is 29.1%.

In short, our figures lead to two conclusions. One, the only software company with an enviable brand name is Microsoft. Indeed, the Microsoft name is worth more than all the other software brands in our table combined. Two, a shakeout is inevitable in this industry, where almost a third of the brands are losing money.

Remember, the values we show are what the brand is worth

to the current owner. Our model is based largely on a brand's earnings. Those brands that lost money over the past two years have no value to the present owner.

Here's how FW calculated the values:

Our analysis focused on operating systems for personal computers and networks, as well as on top application software such as word processors, spreadsheets and desktop publishing. The table includes the companies whose products have the largest market share within each category. We did not include certain public companies and any private companies because accurate information was unavailable.

Next, data such as sales, operating income and market share were gathered with the assistance of trade associations, analysts, corporate reports and the owners of the brands themselves. In some instances, consensus estimates from the above sources were used for brand information. The figures in the table represent all the software each company sells under its corporate name. FW then applied this data to a formula developed and used by Interbrand.

To illustrate how the formula works, let's look at Microsoft. The first order of business is to determine operating income for the company's software (we used a two-year average to help avoid any unusual distortions). For Bill Gates's company, this figure was \$1.46 billion.

The next step usually is to calculate the level of profits that would be earned on a basic unbranded version of the same product. However, since generic products do not exist in the software industry, we instead used the opportunity cost of the capital employed as a proxy. In other words, if you invested the capital used in producing software in risk-free Treasury bonds instead, you could earn an 8% return.

So the value of a software brand name can be roughly approximated by any return exceeding that. For Microsoft that meant subtracting \$143 million (8% of \$1.79 billion). This left brand profits of \$1.32 billion.

Next we deducted taxes of \$457 million (based on an average corporate rate of 35%). This left a software brand net income of \$863 million for Microsoft.

To this amount, Interbrand applied a multiple based on such things as market leadership and the ability of the brand to fend off competitors and to cross geographic borders. The multiple also reflects the degree to which, over time, the brand's importance to its industry is increasing or declining. Microsoft scores high in all of these areas, so it received a multiple of 11.9, by far the highest of the group. That set the final value of Microsoft at \$10.3 billion.—Robert L. Meschi and

Kurt Badenhausen

## To Have and Have Not

| SOFTWARE BRAND      | CURRENT<br>VALUE<br>(MIL.) | CHANGE<br>IN VALUE<br>FROM PRIOR<br>YEAR | 1994<br>SALES<br>(MIL.) | 1994<br>OPERATING<br>INCOME<br>(MIL.) |
|---------------------|----------------------------|------------------------------------------|-------------------------|---------------------------------------|
| Microsoft           | \$10,267                   | 35%                                      | \$4,463                 | \$1,692                               |
| IBM                 | 3,748                      | 246                                      | 11,346                  | 1,676                                 |
| Computer Associates | 1,182                      | 70                                       | 1,456                   | 425                                   |
| Oracle              | 931                        | 113                                      | 1,130                   | 305                                   |
| Novell              | 628                        | -25                                      | 1,898                   | 317                                   |
| Adobe               | 276                        | 18                                       | 598                     | 103                                   |
| Sybase              | 246                        | 64                                       | 484                     | 92                                    |
| Corel               | 132                        | 121                                      | 164                     | 45                                    |
| Lotus               | 111                        | -57                                      | 942                     | 14                                    |
| Apple               | 103                        | 65                                       | 190                     | 31                                    |
| Artisoft            | 38                         | -2                                       | 54                      | 14                                    |
| Delrina             | 25                         | D-P                                      | 101                     | 27                                    |
| Banyan              | 20                         | -37                                      | 119                     | 3                                     |
| Symantec            | 0                          | NA                                       | 265                     | 19                                    |
| Stac                | 0                          | P-D                                      | 26                      | -1                                    |
| Software Publishing | 0                          | NA                                       | 62                      | -10                                   |
| Quarterdeck         | 0                          | P-D                                      | 27                      | -15                                   |
| Borland             | 0                          | NA                                       | 392                     | -43                                   |
| Intuit*             | 0                          | NA                                       | 180                     | -132                                  |

Note: All figures are for fiscal 1994. \*Offer to be acquired by Microsoft pending. NA: Not applicable. P-D: Profit-to-deficit. D-P: Deficit-to-profit.

# A Suite Victory?

Microsoft's brand name may help it dominate office software applications. But its technology won't hurt.

BY SRIKUMAR S. RAO

IN THE EARLY 1980S, OFFICE WORKERS WHO WANTED THE COMPUTERS on their desks to crunch a few numbers turned to an application called VisiCalc. It set up data in rows and columns and made simple arithmetic calculations automatically. If, for example, the value of the item in one row was equal to that of another subtracted from still another, you didn't have to calculate the figure and put it in. VisiCalc did that for you.

Rudimentary though it was, it was the first spreadsheet and, perhaps more than any other program, it was responsible for transforming the personal computer from "interesting child's toy" to "essential business tool."

In text, there was WordStar, one of the earliest word processors. It permitted you to fix mistakes without having to type the entire document all over again. You could shuffle around paragraphs, sentences and lines. Producing reports became a snap, and secretaries started hunting for jobs in other fields.

Then there were data base programs, such as dBase, that let you maintain mailing lists, keep records of customer purchases and track sales trends. Presentation programs like Persuasion let you easily design whiz-bang, impress-your-boss slide shows.

Research shows that, for most people, these four applications account for some 90% of all computer use—not counting network or groupware usage.

But these early applications had a big drawback. You had to learn four separate programs and remember the idiosyncrasies of each. And they wouldn't work with each other. Say

you wanted to include a table in your report. You had to laboriously use the tab function in your word processor to format it and then type in data calculated by your spreadsheet. Or you could cut and paste, relying on rubber cement, white-out and the office copier to give you a finished product.

In the late 1980s, integrated products such as Microsoft Works and Claris Works came along that gave you a single application that included a word processor, spreadsheet and data base. They were easy to learn and did simple tasks well. Problem was, there wasn't very much you could do with them. Each element lacked the power of its stand-alone counterpart, so it was difficult to develop complex applications.

In the last two years, a new breed of software, the office suite, has gained market acceptance. These programs contain heavy-duty, full-function word processors, spreadsheets, data bases and presentation programs in a single package that typically costs a third to a half of what it would cost to obtain them individually. And they are integrated, which means that the menu bars and dialogue boxes in each program are similar. Learn one, and you have almost learned them all. Variations are logically intuitive and easy to understand.

Karl Wong, a software analyst for Dataquest, a research firm in San Jose, Calif., estimates that sales of office suites almost doubled in 1994, to \$1.8 billion. Microsoft Office, with an 86% share, is the 800-pound gorilla of this market and is busy propelling it forward. Wong figures that industry sales will grow by more than 50% this year, with Microsoft holding its own. Lotus's SmartSuite has a 13% share, but he expects it



will slip as competition heats up with the entry of Novell's PerfectOffice, which includes the recently acquired WordPerfect word processor and Quattro Pro spreadsheet programs.

"Microsoft is just an incredible marketing machine," says Wong. "They have an excellent product and can steamroll the competition."

The regular edition of Microsoft Office includes Word, Excel and Powerpoint, individually the best-selling word processor, spreadsheet and presentation graphics programs around. The professional edition of Office also includes Access, the leading data base management system. Both editions include a Microsoft Mail workstation license. There is a similar version for Macintosh computers, though it does not include a data base program.

Microsoft Office incorporates object linking and embedding (OLE) technology, which permits all the components of Office to work together. You can drag data from one program—say a table created in Excel—and drop it in another—say a report created in Word. Want to change some figures? You needn't return to the spreadsheet. OLE permits you to edit the table in Word. Linkage features update the table in Excel as well. What's more, OLE permits any type of information, including audio and video clips, photographs, charts and graphs, to be embedded in a document. Click on the appro-

**"Microsoft is just an incredible marketing machine. They have an excellent product and can steamroll the competition."**

prate part of the text on your computer screen and you can hear voices and see pictures.

Another powerful feature is IntelliSense, a technology that makes the software smart enough to figure out what you're trying to do and automatically produce the correct result.

Tasks such as formatting a document can be done with a single click of the mouse. If you make typos—like keying in "teh" when you want "the"—IntelliSense-powered AutoCorrect fixes it automatically. "Wizards" observe what you are doing at all times, give you tips and simplify your job. The Newsletter Wizard, for instance, asks you simple questions about what your newsletter should look like. When you indicate your choices, the wizard builds it for you.

Value, of course, is a big reason sales of Microsoft Office are so strong. But there is another. You can do much, much more with the package than you could with one or two components. As companies of all sizes discover this, many are rearranging their entire operation around the suite. For instance:

- YES Graphics is a five-person printing company in Woodburn, Ore. It has a color copier, a high-speed black-and-white copier and a self-service copier for walk-in trade. President Bruce Thomas uses a log created in Excel to track all costs—supplies, labor and overhead. Each job is assigned a unique number and Word prints multiple stickers with that number on

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a label sheet. These are then affixed to the job as it progresses through various stages. Previously, problems arose because employees sometimes incorrectly entered numbers.

When Thomas considered acquiring another copier, he made use of his Excel model. All costs for the new copier—lease, pro-rated rent for floor space, electricity and labor—were entered and juxtaposed with expected revenue. It became clear that an extra machine was not really necessary. "I went from relying on a gut feeling to factual information," says Thomas, "And it saved me \$25,000."

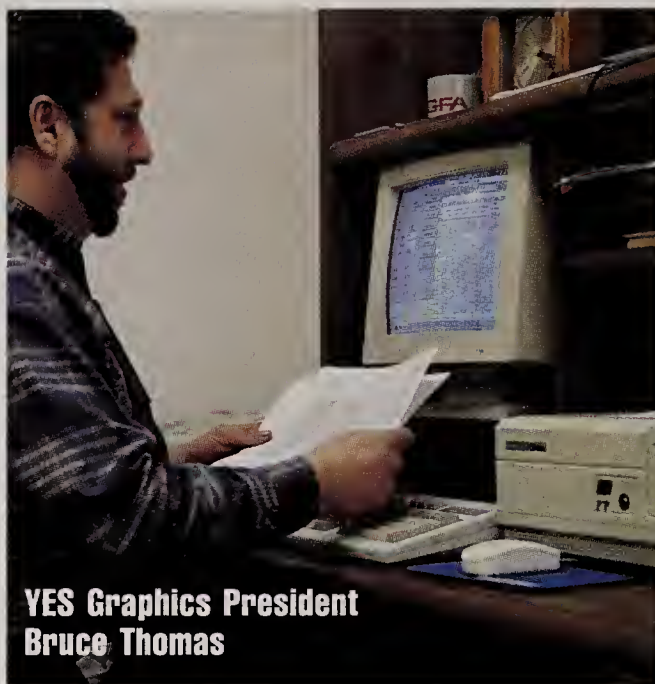
Thomas is using Access to create a data base containing all the jobs YES Graphics has done over the past several years, as well as all its clients. This will permit employees to answer instantaneously any questions customers might have. It will also permit gentle, information-based selling along these lines: "You purchased 10,000 letterheads last December. Would you like us to send you another 10,000 next month?" Also planned is a direct-mail campaign using labels generated by Word from data in Access. Thomas will doubtless come up with other uses as these projects run their course.

- The Cambridge Group in Westport, Conn., recruits physicians for hospitals, HMOs and group practices, as well as physical and occupational therapists for long-term-care facilities and biostatisticians for pharmaceutical companies. The company uses a massive data base, developed on Access, that lists every hospital, pharmaceutical firm, HMO and long-term-care facility in the nation. Group practices are now being entered into the data base, which includes addresses and telephone numbers, details of operations, whether Cambridge has ever sent a candidate there, and if so, with what result.

Cambridge also has a data base of candidate clients listing name, address, qualifications, history and record of whether the candidate was presented and with what results.

"If we have a neurosurgeon who wants to relocate to Chicago," says Alfred Judge, Cambridge's president, "we can call up every facility within a 50-mile radius of Chicago that could conceivably use a neurosurgeon and find out if there are any openings. We also automatically update information if there have been any changes."

The company uses Excel to pull data out of Access for billing, reports to salespeople and the like. "We have an intricate commission system based on a complicated sliding scale," says Judge. "We were able to set up a model in Excel that automatically tells salespeople how much they earned in commissions and why."



**"Before we implemented Microsoft Office, I had three full-time and four part-time employees helping me. Now I have one full-time and two part-time helpers and we still get more work done."**

is assigned an electronic workbook on Excel in which he posts the hours spent on various aspects of a job. Singer can easily generate reports that show the productivity of individual workers, the profitability of specific jobs and the utilization rates of all the company's equipment. Office saves on expenses as well. "Before we implemented Microsoft Office, I had three full-time and four part-time employees helping me," she recalls. "Now I have one full-time and two part-time helpers and we still get more work done."

Larger companies are making similar use of Microsoft Office. National Semiconductor, for example, has installed the software on thousands of stations. In a typical application, Access queries a DBII data base in which the company has historical marketing information, including sales of semiconductor products, margins and bookings. That enables managers to track sales by division, product, customer and distribution category, to name just a few possibilities. "We can slice and dice the data and view it whichever way we like," says Margaret Lam, an analyst and programmer.

Microsoft Office has clearly become the product to beat in the suite market. Entrenched customer loyalty, powerful functionality and aggressive marketing by a deep-pocketed company make it seem just this side of invincible. ■

*Srikumar S. Rao is chairman of the Marketing Department at the C.W. Post campus of Long Island University.*

# The Lotus Position

Lotus counts on customer loyalty and ingenuity to maintain its share in office software.

BY SRIKUMAR S. RAO

IN ITS OWN QUIET WAY, LOTUS WANTS TO CHANGE THE WAY THE U.S. does business. While its share of the office software market and the value of its brand are paltry in comparison to Microsoft, Lotus's users are a loyal bunch, who use the flexible features of its popular Notes program ingeniously.

For a product installed on 1.3 million PCs, there is surprisingly little agreement on what exactly Lotus Notes is. It is not E-mail, though it does serve as a communications medium. It is not a bulletin board, though it can function as one. It is not a data base, though organizations routinely use it as a depository for voluminous information. It is not a chat line, though it can provide the same sense of community and belonging. It is all of these—and somehow, inexplicably, much more than the sum of the parts. It is not the “best” in any one of these applications, but they all work together in a warm, friendly, fuzzy fashion that generates considerable loyalty and enthusiasm.

It's easy to see why. As computers crept into the workplace in the mid-1980s, workers used spreadsheets, word processors, data base programs and presentation graphics to boost personal productivity. In the late 1980s and early 1990s, coordination between people became possible with E-mail, team scheduling, work-flow automation and project management. If Lotus Notes isn't the first, it is certainly the most popular application to go one step further and permit true collaboration among workers.

What makes Notes work is a process called replication. The same information is copied from computer to computer throughout an organization. You can work with an associate in Hong Kong and the two of you will be responding to the same image on your individual screens, even though they were put there by different servers. If the computers are not permanently connected in a wide area network (WAN) or a local area network (LAN), the information is automatically updated each time a connection is made.

Think of Notes as a basket. You can put all kinds of goodies in it and, because of replication, anybody on the system can take whatever he needs when he needs it. Remember when you had to carry around a bulky reference manual and update it periodically by throwing away sheets with obsolete information and inserting sheets with new information? No more. A permanent and always current manual on Lotus Notes can give you whatever information you need at any time of the day or night. All you need is a laptop and a phone. Companies with large mobile sales forces report substantial savings since printing and distribution costs are reduced or eliminated.

It's also easy to link information to create a custom application. Say a salesperson places an order from a remote customer location. Notes can indicate that this depletes inventory and automatically generate a replenishment purchase order.

Or say you're trying to rush a new product to market and need approvals from various departments including R&D, manufacturing and marketing. In the old days this would have been a time-consuming, sequential process as everyone signed off on the same piece of paper. With Notes, all documentation—including graphs, charts, blueprints and audio and video clips—can be made simultaneously available to everyone concerned, cutting the time spent on the process by at least half.

The big advantage of Notes is its ability to store and disseminate information. After years of use it can even serve as the institutional memory. Not surprisingly, companies whose stock-in-trade is information have been the first users and the biggest proponents of Lotus Notes. Andersen Consulting, Price Waterhouse and other giants have installed Notes at tens of thousands of stations and even reengineered their businesses around it. Some companies even evaluate employees on how well they share information on Notes.

Since Notes is so good within the company, employees soon want to use it outside the firm as well, says Eileen Rudden, Lo-

tus's vice president for interenterprise communications. Connecting outsiders can become a daunting task for even the largest and most sophisticated Notes users. Who maintains the servers? Who assures the security of confidential data? Who fields the "Help!" call that comes in at 2 A.M. on Sunday morning?

Enter AT&T. Network Notes is an agreement between Lotus and the telephone behemoth to provide business access to Notes without the costs associated with supporting and staffing a private network. In effect, AT&T agrees to maintain the servers, guarantee security of data and handle all the connectivity and support problems, for a fee. Given its global presence, most of the world's population will be able to reach the

sheet market leader for years before it was replaced by Microsoft Excel. But this time numbers may not tell the whole story. Most current Notes users are large companies that tend to shape software usage trends, and many of them are busy pushing Notes. Hewlett-Packard has committed to Notes as its exclusive future integrated groupware and messaging standard. Companies like Sun, Apple and IBM have agreed to bundle Notes into their hardware or operating systems. And there has been a sea change in the way Lotus markets its product.

"When I took this job in February 1993, 85% of Notes revenues came from our direct sales force," says Jeff Papows, vice president of Lotus's communications product group. "Today,

85% of the revenues stem from our business partner efforts." A business partner is an independent company that develops and markets business solutions that use Lotus products and services, and there are more than 8,000 partners and counting. They range from big ones like IBM and KPMG Peat Marwick to small ones like NextAge, a 10-person training firm in Norwalk, Conn. This is the other leg of Lotus's market penetration strategy and the firewall it has built up against competition. Thousands of sharp entrepreneurs are making a living pushing Notes into the farthest corners of the business world and they will resist competing products that could devalue their investments of time and money.

"Most customers don't buy Lotus Notes. They buy sales-automation programs, or patient-tracking systems or other solutions to their specific problems," says Papows. "For

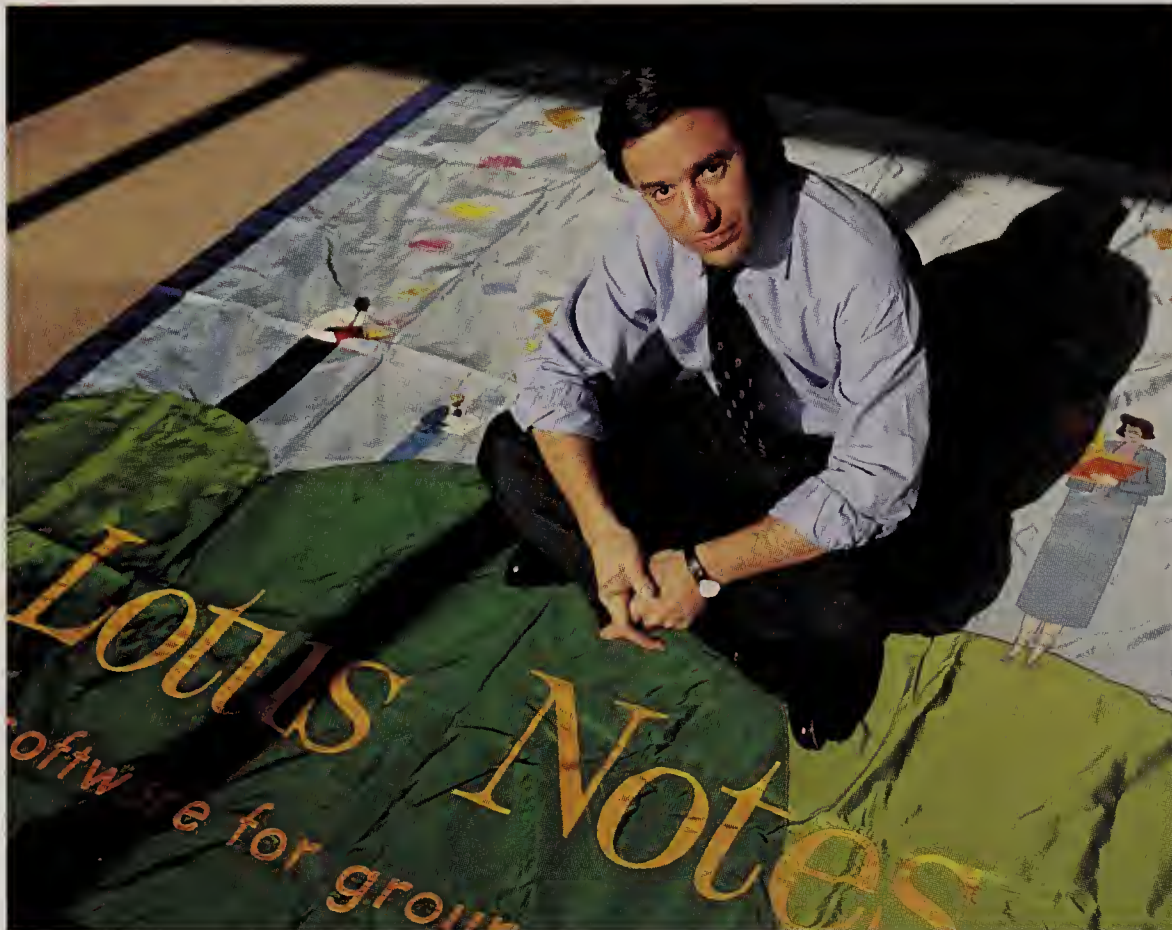
every dollar we get for a Notes license, the customer spends \$5 to \$10 in training and accessory products. These go to our business partners and when they win, we win too. That's why it will be very difficult for anyone to knock us off the market."

A looming shadow over this rosy picture, however, is the oft-delayed Microsoft Exchange. The trade press has recently reported that it may debut later this year but will have "gaping holes" that will prevent users from developing sophisticated applications, at least for a while.

Given the combined strength of Lotus's partners, it appears unlikely that Microsoft will be able to displace it in the foreseeable future. Still, Microsoft's marketing muscle and deep pockets will ensure that it remains a player. "No single platform will appeal to all companies," maintains Greg Lobdell, Microsoft's group product manager for Exchange. Lobdell points out that Exchange will be able to interface with Notes.

At this point, it looks as if Microsoft will have to make some room for Lotus. ■

*Srikumar S. Rao is chairman of the Marketing Department at the C.W. Post campus of Long Island University.*



service with a local phone call.

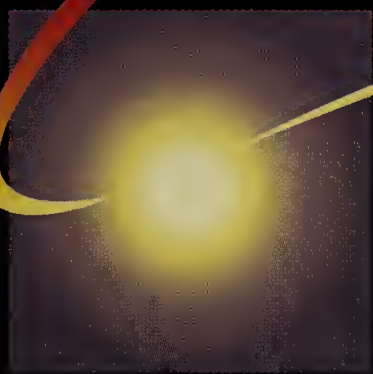
**Lotus CEO Jim Manzi**

Now in the test phase, Network Notes will be rolled out later this year. By using this system, smaller companies will be able to benefit from Notes features without investing in infrastructure. Large companies will be able to move a step closer to boundaryless communication with clients and vendors. The possibilities are mind-boggling. "This new service has the potential to change the way businesses do business, much as AT&T changed business when it introduced 800 service in 1967," declares Alex Mandl, AT&T executive vice president and CEO of the communications services group. At a Lotus-organized meeting in Orlando, Fla., in January, John Petrillo, president of AT&T's business communications services, announced plans to spend \$250 million to build a multimedia platform and several millions more to scale up to a full-featured offering of Notes to the public. The alliance with AT&T is one leg of Lotus's strategy to increase penetration before significant competition arrives.

An estimated 70 million PCs run on DOS or Windows operating systems, so the presence of Lotus Notes on 1.3 million of them does not seem a daunting obstacle to a major competitor like Microsoft. Lotus 1-2-3, after all, was the spread-

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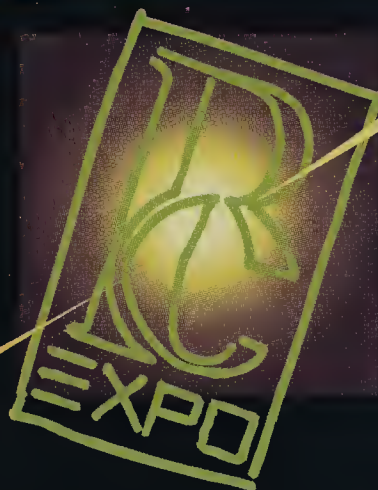
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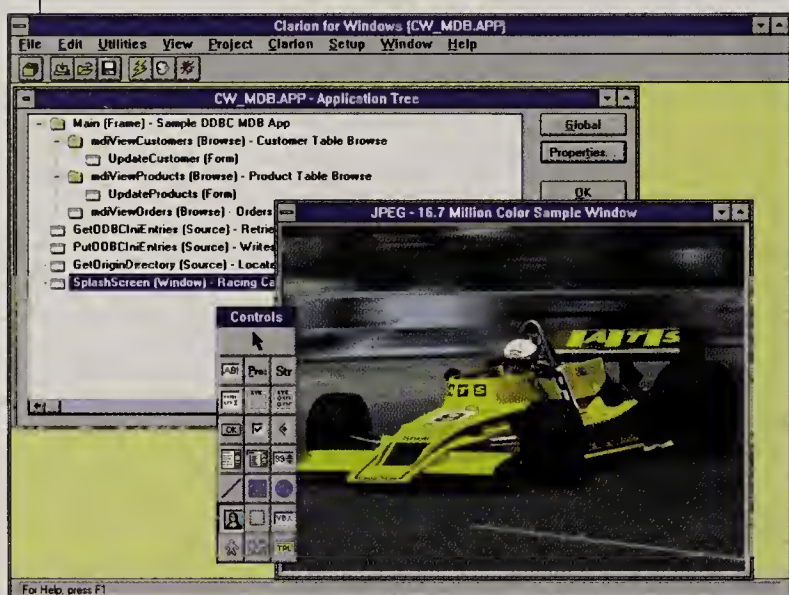
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# FYI

## Everyman Programming

Taking the art of programming out of the hands of the code writers and putting point-and-click application-development tools onto every desktop may be an ambitious—some might say ridiculous—goal. But that's exactly what TopSpeed Corp.'s Clarion for Windows is all about. (TopSpeed Corp. is the result of a strategic merger between Clarion Software Corp. and Jensen and Partners International.)

TopSpeed has developed a software-application tool for PCs that works with the familiar



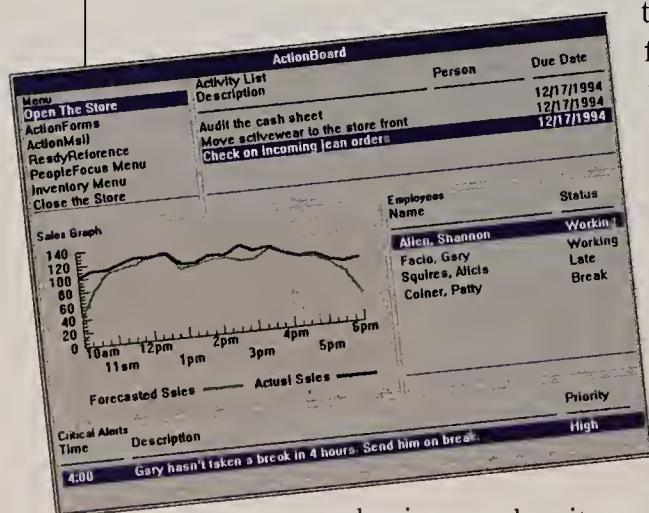
Windows graphical interface. Clarion for Windows lets developers assemble templates to help them—and their power end-user programmers—create database applications quickly and relatively painlessly, according to the company. The software works in stand-alone or networked environments.

Retailing for \$1,299 per seat, Clarion for Windows accommodates most database file formats; others can be added for an additional cost. For more information, contact TopSpeed at 800 354-5444.

## Act Now! Don't Delay!

Suppose sweater sales are slumping today at a specialty-clothing retailer. You wouldn't expect the busy store manager to notice, let alone figure out why and correct the problem the same day. Maybe in 24 hours it might show up in POS data reports, and an insightful manager might figure out the problem. A better approach would be some sort of monitor that could spot these trends in real-time and alert the manager. Better yet, the system could also suggest possible causes and corrective actions, a real help to a novice or management trainee. That's the premise behind ActionBoard, an event-driven, dashboard-like monitor from Park City Group, the Mrs. Fields Cookies IT spinoff.

ActionBoard sits atop the various modules of Park City's PaperLess Management system, a series of programs for multiple-unit retail



firms that automate things like labor scheduling, time and attendance reporting, sales reporting and forecasting, and cash sheets. Resembling a car dashboard, the ActionBoard screen shows several windows that monitor store sales by hour, sales versus projections, which employees have clocked in, what tasks they are scheduled for, and announcements and directives from the head office. The data can be refreshed every second.

The system alerts managers via a beeper or pager if there's a problem that requires immediate action. And, based on preprogrammed

business rules, it suggests appropriate actions in a task window. For example, the sweater-slump warning will include a suggestion to check the condition of the sweater display area. If the manager finds it understocked or messy, a quick glance at the labor-scheduling window reveals that the clerk responsible for the display called in sick this morning. A remedy is now possible before the day becomes a total loss for sweater sales.

The price for ActionBoard will generally range from \$500 to \$600 per location. Contact the firm in Park City, Utah, at 801 645-2105.

## You Can Take It With You

So, you're a telecommuter. You've equipped your home office with all the necessary equipment, but you're not pleased with the limited features of your home telephone. You still have to go through the company phone system to use voice mail, and the speed dials you programmed into your office phone do you no good at home. Or so you thought.

AT&T's Telecommuter Module transforms any touch-tone telephone into an advanced business phone. The product connects to any corporate phone system to forward calls and extend business features to touch-tone home, satellite office or cellular phones. When an incoming call is a business call, the system alerts the user with a distinctive ring. If the telecommuter cannot take the call, the Telecommuter Module can forward it to an office secretary or to the individual's voice mailbox. The product also provides access to other phone features, such as abbreviated extension



dialing and teleconferencing. In addition, the Telecommuter Module enables telecommuters to make calls through a corporate phone system, allowing them to receive corporate calling rates.

The \$1,095 module supports one worker at a time; however, if workers telecommute on alternate days or are assigned to different work shifts, they can share the device. One module serves up to 25 non-overlapping users.

For more information, call AT&T at 800 451-2100.

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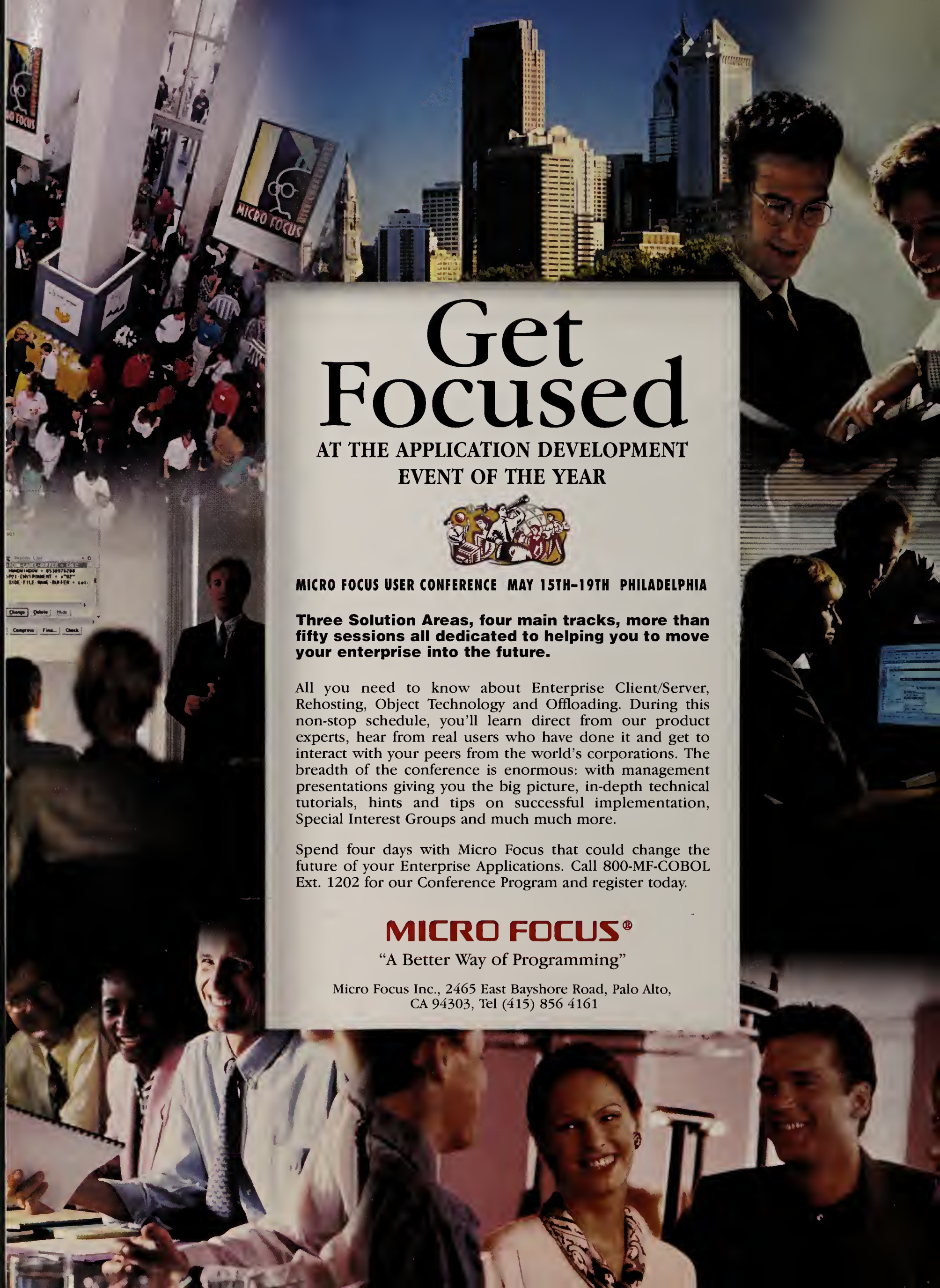
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